Environmental Statement

ERECTION OF POULTRY UNIT

H & E POWELL

November 2020

BERRYS

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PROJECT
Erection of broiler poultry unit at Llwyngwilym.

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1. Introduction

1.1 Introduction to the Proposed Development

The applicant, H Powell, is a family farming business. As well as Mr Powell two of his sons help to run the family farm and have their own young families. The poultry unit will be managed by Jake Powell. Llwyngwilym is a mixed farm which extends to 564 acres of owner occupied land together with a further 1270 acres of rented land. There is a large suckler cow herd, finishing cattle and a sheep flock. There is also an existing 24,000 free range mobile unit.

Planning permission was granted dated 30th June 2020 (ref: 18/0463/FUL) for the erection of a broiler unit, creation of access and all associated works at Llwyngwilym Farm, Rhayader, Powys, LD6 5NS. This application seeks to add a second poultry building on the site. The total number of birds would double from 55,000 to 110,000.

This report forms the main body of the Environmental Statement and a separate Appendix Document has also been prepared. A separate application is to be made to National Resources Wales (NRW) for an Environmental Permit to operate the facility.

1.2 Site Location/Description

The proposed development site is located at Llwyngwilym Farm, which is situated off the B4518 approximately 1 mile to the north of the town of Rhayader. The site for the poultry unit has been sited away from the main farmstead to allow for better biosecurity and also for better access off the B4518. The site is situated around 900 metres to the south-west of the main farmstead within a grass field and is accessed off the B4518.

The site of the additional building is immediately to the north-west of the approved building and sits parallel. A site location plan can be seen at ***Appendix 1*** in the accompanying Appendix Document.

1.3 The EIA Process and Regulatory Process

The Town & Country Planning (Environmental Impact Assessment) (Wales) Regulations 2017 require that for certain developments an Environmental Impact Assessment (EIA) is required (hereinafter referred to as The EIA Regulations). The Regulations set out the types of development where an EIA is mandatory (Schedule 1) and when the need for an EIA will be determined if the development is likely to

have significant environmental impacts by reason of factors such as the size, scale, location or other likely impacts (Schedule 2). The threshold for when a development falls as a Schedule 1 development for installations for the intensive rearing of poultry is 85,000 places for broilers and 60,000 places for hens.

This EIA has been based on advice received from Powys Council and Berrys experience of what has been required for similar applications recently submitted.

The objectives of the EIA are to identify potential environmental impacts of a proposed development and identify measures to mitigate any adverse impacts. The Environmental Statement (ES) will report the finding of the EIA. The necessary information to assess impacts on the natural environment to be included in an ES, specifically:

- A description of the development – including physical characteristics and the full land use requirements of the site during construction and operational phases.
- Expected residues and emissions (water, air and soil pollution, noise vibration, light, heat, radiation, etc.) resulting from the operation of the proposed development.
- An assessment of alternatives and reasoning as to why the preferred option has been chosen.
- A description of the relevant aspects of the current state of the environment (baseline scenario)
- A description of the aspects of the environment likely to be significantly affected by the development, in particular, population, human health, biodiversity, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors.
- A description of the likely significant effects of the development on the environment resulting from the construction and existence, use of natural resources, pollutants, noise, vibration, light, heat, radiation, and nuisances, waste, risks to human health, cultural heritage and environment, the cumulation of effects with other existing and/or approved projects, impact on climate, technologies and substances used – direct effects but also any indirect, secondary, cumulative, short, medium and long term, permanent and temporary, positive and negative effects. Effects should relate to the existence of the development, the use of natural resources and the emissions from pollutants. This should also include a description of the forecasting methods and where possible offset any significant adverse effects on the environment.
- Description of forecasting methods or evidence used to assess the significant effects on the environment. An indication of any difficulties (technical

deficiencies or lack of know-how) encountered by the applicant in compiling the required information.
- A description of the measures envisaged to prevent, reduce and where possible offset any significant adverse effects on the environment and any monitoring.
- A description of the expected significant adverse effects on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned.
- A non-technical summary of the information.
- Reference detailing the sources used

The EIA has been conducted in accordance with the latest Government regulations and advice on good practice and carried out taking due consideration to other guidance such as that contained in the Institute of Environmental Management and Assessment's (IEMA) 'Guidelines for Environmental Impact Assessment', and where appropriate specific guidance for individual issues.

Any impact identified is assessed by looking at the degree of alteration from the baseline state which can be predicted (the magnitude of the effect) and the sensitivity of the receptors. The scoping and consultation process identifies the likely impacts and the nature of the receptors. Significance of the impact is evaluated using the following criteria:

- The value of the resource (international, national, regional and local importance)
- The magnitude of the impact
- The duration of the impact (long/short term, temporary/permanent)
- The reversibility of the impact
- The number and sensitivity of receptors
- The nature of the impact
- Whether the impact is direct or indirect

The significance of the impact (positive or negative) is generally considered to be one of the following:

- No significance/negligible – beneath the levels of perception, within the normal bounds of variation or within the margin or forecasting error; a non-detectable change to a location, environment or species
- Minor significance – a detectable but non-material and non-noteworthy change to a location, environment or species at a local level, relevant quality standards not approached

- Moderate significance – a material and noteworthy but non-fundamental change to a location, environment or species of local or district importance, relevant quality standards may be approached
- Major significance – a fundamental change to a location, environment or species of district to regional importance, relevant quality standards exceeded
- Extreme significance – a fundamental change (e.g. loss) to a location, environment or species of national/international importance, relevant quality standards exceeded by a substantial margin on a regular basis.

The assessment of impact considers residual impacts following mitigation measures introduced to reduce, remedy or avoid any significant adverse impacts.

The ES will describe the project and the key issues that arise. A non-technical summary of the findings will also be provided. The main body of the ES will include the following:

- Introduction – background, site information and the EIA process
- Scoping and Key Issues – topics to be assessed
- Development Description – details of the construction, use and physical nature of the development and its use
- Policy & Legislation – summary of planning and legislative content of the proposals
- Alternatives – the alternatives considered including 'do nothing' and alternative locations
- Environmental Assessment Chapters to cover; air quality, health and climate; landscape and visual assessment; heritage assets, highways; amenities; ecology; noise and vibration; odour, water resources, arboriculture, ammonia
- Conclusion – an overview of the assessment

The ES has been written by Berrys with the assistance of the specialist consultants listed below:

- Ecology – Turnstone Ecology
- Odour Assessment – Isopleth Limited
- Ammonia Assessment – Isopleth Limited
- Noise Assessment – ION Acoustics

2. Scoping and Key Issues

2.1 Introduction

This section explains the nature of the application area and its immediate environment. It also sets the context for demonstrating that the site is suitable for the proposed development.

2.2 The Scoping Process

The EIA regulations set out the general information that should be included in an Environmental Statement with the principal issues being 'population, human health, biodiversity, fauna, flora, soil, water, air, climatic factors, material assets, including the architectural and archaeological heritage, landscape and the interrelationship between the above factors'. The EIA Regulations also require the EIA to cover direct effects and any indirect, secondary, cumulative, transboundary, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from: the construction and use of the development; the use of natural resources in particular land, soil, water and biodiversity; emissions of pollutants, noise, vibration, light, heat and radiation, nuisances, disposal and recovery of waste; risks to human health, cultural heritage or the environment; the cumulation of effects with other existing and/or approved projects taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected; the impact of the project on climate and the vulnerability of the project to climate change; the technologies and the substances used.

The scoping process determines the amount of information required to be provided on the principal issues in the ES. This allows the LPA to identify the key issues at an early stage to enable them to be dealt with and can inform developers of issues that they may not have been aware of.

This EIA has been based on advice previously received from Local Planning Authorities, and Berrys experience of what has been required for similar applications recently submitted. The following information will be included:

- An assessment of alternative sites
- Planning policy background
- Landscape and visual impact
- Air quality, ammonia, health and climate
- Historic environment
- Highways
- Ecology and biodiversity

- Noise and vibration
- Arboriculture
- Odour
- Flood risk and drainage

2.3 Summary of Receiving Environment

The receiving environment has been fully considered in subsequent chapters of this report and summarised below.

General

The site is within a grassland field around 900 metres to the south-west of the existing farmstead and around 850 metres north of Rhayader. The site is accessed via an internal access track off the B4518. The access is being improved as part of the approved unit. The total site area is around 3.20 ha.

The land immediately surrounding the site is agricultural and field boundaries are mostly formed by hedgerows with some hedgerow trees.

Air Quality

There are no known locally designated Air Quality Management Areas close to the site.

Landscape

The Site is located to the north-east of the town of Rhayader. The landscape is one of gentle smooth upland hills with the landscape becoming more rugged to the west of Rhayader. The site is set within a sloping grassland field approximately 180 metres from the B4518. The surrounding area is mostly agricultural with many grassland fields. Hedgerows form most of the field boundaries with many hedgerow trees. There are also several small and some larger blocks of woodland.

Highways

The proposed development site is accessed directly from the B4518 St Harmon Road county road, which links to the A470 Trunk Road approximately 1.25km to the south west of the site at Rhayader. To the north east the B4518 connects a number of smaller settlements of Mid-Wales, but does not provide a wider strategic function.

Population/Socio Economics

Llwyngwilym lies within a rural area approximately 850 metres from edge of the town of Rhayader. There are also several individual properties in the vicinity of the site with the closest being Beli Gof approximately 190 metres from the site.

Noise

The noise climate at this location is governed by distant road traffic noise which included sporadic movements on the B4518 and the surrounding A roads (A470 and A44). Some noise from livestock and birdsong is also evident.

Ecology

The proposed development site is located within a short-sward improved grassland field which slopes down to the north. The northern, southern and eastern field boundaries are formed by hedgerows and the western boundary is formed by a combination of fencelines, hedgerow and scattered trees.

Water Sources and Drainage

The British Geological Society and the Cranfield University Soilscapes maps have been consulted which show the site as having loamy, freely draining soils underlain with the Rhayader Mudstone formation. Mudstones have significantly varying degrees of permeability.

An unnamed watercourse is located to the north of the development site, which runs to the River Wye located to the south west at Rhayader. This watercourse is available for a controlled discharge from the development, is within the applicant's ownership and the development land presently drains to it.

Cultural Heritage

The HER does highlight historic assets notably traditional farm buildings at Coed-yr-ardd and Ffos-mascal. The site is not within a Registered Historic Landscape, however the historic core of Rhayader is a conservation area. There are no listed buildings or scheduled monuments within or adjacent to the study area. There are a selection of listed buildings within the settlement of Rhayader.

2.4 Scoping

This EIA has been based on advice previously received from Powys Council, and Berrys experience of what has been required for similar applications recently submitted to Powys Council.

2.5 Cumulative Assessment

Rationale:

A Cumulative Impact Assessment (CIA) looks at whether the impacts of multiple projects or activities create a cumulative impact greater than or different to that of each individual project. The CIA needs to be kept reasonable and in proportion to the nature and scale of the development. The CIA should consider potential for significant impacts rather than on covering every conceivable impact that might occur. CIA should be proportionate, focussing on key impacts and sensitive receptors to ensure a holistic assessment of the environmental risks and impacts.

Poultry Sites:

The proposal seeks planning permission for the operation of a further 55,000 broiler building with associated infrastructure on a site which already benefits from planning permission for a single 55,000 bird poultry unit.

3. Assessments of Alternatives

3.1 Potential Locations and Considerations

To maintain the viability of the farming business, a decision was made by the family to diversify the existing farming activities. Once the decision was made to diversify the existing farm business into broiler production careful consideration was given to the most appropriate location for the poultry unit. There is existing planning permission for a single building on the proposed site.

The site for the original poultry unit was chosen after weighing up the pros and cons of this site and potential alternative sites.

The first option to consider is whether it is suitable to site the poultry buildings by the existing farmstead. The farm is however a highly developed unit with a large range of modern steel portal framed farm buildings together with retained traditional buildings. There are also silage clamps and manure stores. The main farmstead accommodates suckler cows, finishing cattle, sheep and there is also a 24,000 bird mobile free range egg unit. It was considered that it was not suitable to locate the broiler unit at the main farmstead and a site away from the farm buildings was required to maintain an appropriate level of biosecurity.

As it was considered not suitable to locate the broiler unit at the main farmstead, alternative sites were considered. The landscape of the area farmed by the family varies, and this was a key consideration to reduce visual impact. The site was chosen to be away from the existing buildings to maintain biosecurity and also utilising good highways access. The site is also surrounded by existing hedgerow boundaries and woodland which will provide a level of screening. Proximity to residential properties and Rhayader was also a consideration.

As there is already consent for a 55,000 bird unit at the location, it is considered that the only suitable site for an additional 55,000 bird building would be as an extension to the existing unit.

3.2 Site Location

The proposed additional poultry building has been sited immediately adjacent the existing building and will run parallel. This is primarily for operational reasons but would also have less visual impact.

The most practical orientation for the building is parallel to the existing building. Locating the poultry unit on the chosen site would be beneficial and sustainable in terms of practical site management. This includes issues such as site security, access, storage facilities, existing infrastructure and vehicle movements.

In conclusion, following careful consideration of the alternatives, the chosen site was considered to be most suitable in terms of practical farming operations, and minimising any environmental impacts.

4. Development Description

4.1 Existing Farm Unit

The applicant, H & E Powell, is a family farming business which consists of Mr and Mrs Powell. Mr and Mrs Powell have three sons, two of which help to run the family farm and have their own young families. The poultry unit will be managed by Jake Powell. Llwyngwilym is a mixed farm which extends to 564 acres of owner occupied land together with a further 1270 acres of rented land. There is a large suckler cow herd, finishing cattle and a sheep flock. There is also an existing 24,000 free range mobile unit.

Planning permission was granted dated 30th June 2020 (ref: 18/0463/FUL) for the erection of a broiler unit, creation of access and all associated works at Llwyngwilym Farm, Rhayader, Powys, LD6 5NS. This application seeks to add a second poultry building on the site. The total number of birds would double from 55,000 to 110,000.

4.2 Proposed Development Overview

To help to diversify the farm business it was decided to establish a broiler poultry unit at Llwyngwilym Farm. The most suitable location was decided to be on the site of the existing unit. The additional building will be immediately to the north of the approved building and run parallel.

A site location plan can be seen at ***Appendix 1*** in the accompanying Appendix Document.

As with the approved building the proposed building will measure 115.8m x 24.4m with an internal eaves height of 2.5m and ridge height of 5.1m. The tops of the ventilation chimneys will be at 5.94m. Feed bins will be situated between the buildings and have a height of 8.3m. There will be a yard area and access around the buildings. The buildings will be specifically designed and constructed for broiler rearing and be fully compliant with the latest welfare standards. The buildings will be fully ventilated.

The buildings will be heated using biomass boilers located within the control rooms to the front of the buildings.

The following sections describe the production systems, the built development, operation of the site and environmental controls.

4.3 Production Cycle

The stocking of the buildings is dictated by the poultry company who can request heavy birds are produced rather than the standard weight birds. This ES describes the production cycle for a 'worst case scenario' based on higher stocking numbers for standard birds rather than heavy birds. Standards are grown to a lower weight over a shorter period than heavier birds. The birds will be grown on a 35 to 38 day cycle with a thin at 30 days. There will be a turn around period of between 7 to 10 days between cycles. The break between crops could be longer at certain times of the year such as Christmas or if clean-out is delayed, leading to around 7.5 crops per year.

The birds will be brought in as day old chicks at a 50-50 mix of males and females. At the end of the growing period they will be collected and transported to a processing plant. A 36 day growth cycle (with a thinning at day 30) will result in the birds being around 2.0kg in weight by clearout.

For the comfort and productivity of the birds the temperature within the houses must be regulated. The fans will operate at a variable rate dependent upon the age of the birds and will only be switched off when the sheds are vacant. There is sufficient fan capacity (including back-up systems) to ensure that the comfort of the birds is maintained even in the event that the outside ambient temperature rises above 30ºC.

The birds will be grown for a food processing company that supplies chicken to the retail trade. In order to supply the retail trade, all farmers must as a minimum, be members of the independently audited Red Tractor Farm Assured Chicken Scheme (formerly ACP). The scheme requires farmers to comply with strict management requirements such as stocking at a maximum of 38kg/m^2. Some retailers now require the supply of 'Higher Welfare Chicken' (HWC), which includes those endorsed by the RSPCA Freedom Foods Scheme stocked to a lower rate of 30kg/m^2. The applicants do have a letter of support from Avara Foods who require very high standards of welfare and regular audits. However, as this is based on a 'worst case scenario' the higher stocking rate has been used to ensure the maximum stocking has been considered.

The chicks will be brought in from a hatchery with the average crop cycle being 36 days plus the clean-out period. Before the chicks arrive the bedding is put in the buildings, which consist of wood shavings to a depth of around 2cm. The houses are warmed to a temperature of around 34 degrees. The buildings will be heated using biomass boilers with back up gas heating. The temperature is reduced as the birds grow older and the ventilation rate conversely increases. Feed will be supplied by the processing company with additional grain grown on the farm. It will be mixed according to the birds requirements at each stage of growth. The protein and

phosphorous levels are reduced as the birds get larger. The water will be supplied by nipple drinkers which offer water on demand but minimise spillage.

The birds are checked regularly and any mortalities removed on a daily basis. The dead birds will be stored in vermin proof containers to await collection by Animal Health Approved contractors. Collection at poultry units takes place more often than with other livestock enterprises and can be every second or third day.

At the end of the production cycle, the birds are removed and transported to the processing site. The buildings then go through a thorough clean-out phase which involves dry-cleaning to remove organic material, wash down and disinfecting. The normal turn around period is around 7-10 days before the buildings can be re-stocked and the cycle starts again. The break between crops could be longer at certain times of the year such as Christmas or if clean-out is delayed.

4.4 The Built Development and Systems

One purpose designed broiler poultry building will be constructed adjacent to the existing site. The buildings will be of portal framed construction with insulated box profile metal sheeting to the walls and box metal profile sheet roofs. The buildings have been sited according to the ground levels as set out on the topographical survey and to best fit the site and surrounding area including the existing building. The internal flooring will be a smooth, easily washable concrete floor on a damp proof membrane. The walls will be on a poured concrete foundation.

The roof construction typically consists of an internal steel box profile 'ceiling' with a minimum of 140mm but potentially up to 280mm fibreglass insulation between timber purlins with steel box profile sheeting external roof covering. Walls will be timber framed panels/battens with 100mm fibreglass insulation with external steel box profile sheeting. It is proposed that the sheeting is Juniper Green in colour.

The buildings will be insulated with fibre glass insulation to the walls and roofs to a U value of <0.4 W/m^2 degrees. This will eliminate condensation on the inner lining of the buildings and minimise any solar heat gain. The buildings will be ventilated by a computer controlled mechanical system.

The building will include an acid scrubbing system (IPT VentMax 1200) for odour and ammonia control to ensure that emissions to air are mitigated. This has a maximum ventilation capacity of 120,000m^3/hr (33.33m^3/s).

There will be 3 feed bins to the side of the building (between the two buildings) which will have a capacity of 30 tonnes and measure 8.3 metres in height.

Due to the sloping nature of the landform, the buildings will be cut into the site.

Lighting on the site will be kept to a minimum to ensure the safe operation of the site but to reduce any light spill outside the unit. Each shed will have a low-wattage, low intensity light above the openings to allow safe working during normal working hours during the winter. Additional lighting may be required during the removal of birds but this will be carried out in low light levels to avoid causing unnecessary stress to the birds. There will be no use of high intensity lighting.

During hours of darkness the buildings will be lit internally to around 0.4 lux for bird welfare. As the buildings will be clad with high density metal profile sheeting there will be no light spill outside the building. The doors will be shut and windows shuttered at night to stop light escape.

The layout of the site can be seen on the site plan at ***Appendix 1***.

4.5 Site Construction

The poultry buildings are purposed designed for poultry rearing and will take around three months to construct on site. The buildings will be set back into the field and soil stripped using 360 degree loaders to be placed in temporary field heaps. Some of the soil will be used for levelling and landscaping and any remaining utilised elsewhere on the farm.

The buildings will be erected using specialist contractors with materials such as concrete and structural steelwork being imported on to the site. Steelwork will be erected using low loaders. The buildings will be fitted out by qualified electricians and plumbers.

To avoid causing disruption to local residents construction will be limited to the hours of 07.30 to 18.30 Monday to Friday and 08.00 to 13.00 on Saturdays. No construction will take place on Sundays or Bank Holidays unless absolutely necessary. This will only take place with the consent of the Local Planning Authority.

4.6 Site Management

The management of the site will be overseen by Mr Jake Powell. All staff working for the site will be suitably trained and experienced in working on a poultry site. The site will operate 24 hours a day, 7 days a week as continual management and husbandry is required for livestock.

The feed will be mixed to the appropriate requirement at each stage of the production cycle. The feed will be blown from bulk feed HGVs into the feed bins and fed directly into the buildings. Nipple drinkers will be used as they provide water

on demand but minimise wastage. They also have benefits in terms of management, hygiene and odour control (due to the low spillages keeping the bedding dry).

The bedding will be wood shavings to a depth of around 2cm. This complies with the Red Tractor' Assurance Scheme Standards (formerly ACP) and will allow the floor to 'breathe'. The litter will be removed at the end of each production cycle. It will be cleared out by the specialist contractors using small machines such as bobcats and loaded into trailers directly inside the doors.

All of the chicken manure produced in the buildings will be utilised on the farms arable land. The farming area extends to around 2,000 acres (809ha). Prior to spreading the manure will be stored in appropriately sited temporary field heaps.

The proposed system of surface water drainage will consist of various components to collect, convey and treat surface water. We propose that water from the building roofs will be collected via a combination of rainwater harvesting tanks and stone-filled filter drains. The filter drains will provide a level of infiltration, source control / upstream attenuation and a level of treatment before flowing to the downstream soakaway tanks or system of attenuation. The yard areas of the development will require a system of positive drainage intercepted by gullies, with diverter valves fitted for times of washing down vehicles and residual muck deposited on the concrete surfaces following cleaning of the buildings between cycles. During washing down, the diverter valves will be engaged to direct water to the underground effluent tanks in order to prevent pollution of the surface water system.

A dry clean will take place to remove organic material before the sheds are washed down so there will be very little solid matter taken away with the wash water. Each shed will take around 6 hours to be washed down with drains in the lowest corner of the shed taking the water directly to the tanks. The tanks will be of a size to ensure that they can take the volume of washings from the clean-out and also have the capacity to allow for any heavy rain falling on the outside yard areas. There will also be a level indicator to ensure that if the tanks are becoming full they can be emptied using the farm equipment. The water will be taken away for safe spreading on the surrounding farmland. The wash water will be diluted and have a low nitrogen content and can be spread at times of the year so does not need to be included in the calculation of nutrient loading for field applications. An isolating valve will ensure that dirty water does not enter the clean water drainage system.

4.7 Environmental Controls

A licence to operate the site under the Environmental Permitting (England and Wales) Regulations 2010 will be required. The EPR are regulated by Natural Resources Wales. An application will be submitted to run concurrently with the planning application. This process will require a detailed assessment of the controls on air pollutants/air quality and also considers the impacts of ammonia on any ecological sites. EP aims to achieve integrated prevention and control of pollution arising from activities listed in Annex 1 of the European Council Directive 96/61/EC, leading to a high level of protection of the environment as a whole. It provides a system requiring operators and regulators to take an integrated, overall look at the polluting and consuming potential of the poultry development. Operators should take all appropriate preventative measures against pollution, in particular through the application of best available technique enabling them to improve environmental performance.

4.8 Decommissioning

The site will be maintained during the lifetime of the development and materials not allowed to deteriorate so as to have the potential to cause contamination. The construction of the buildings will comply with all relevant legislation and standards and industry good practice. The impact of the decommissioning will be considered during the design and construction phase.

Before operations cease at the site, a Site Closure and Restoration Plan will be prepared. This will ensure that the site is decommissioned in an appropriate manner and restored to its former state. Much of the building material, particularly the concrete and metal, should be recyclable depending on market conditions and regulations at the time. The Site Closure and Restoration Plan will be prepared in consultation with the Environment Agency.

5. Policy Assessment

5.1 National Planning Policy

Planning Policy Wales (PPW), edition 10 was published in December 2018. Planning Policy Wales (PPW) sets out the land use planning policies of the Welsh Government. It is supplemented by a series of Technical Advice Notes (TANs), Welsh Government Circulars, and policy clarification letters, which together with PPW provide the national planning policy framework for Wales.

The primary objective of PPW is to ensure that the planning system contributes towards the delivery of sustainable development and improves the social, economic, environmental and cultural well-being of Wales, as required by the Planning (Wales) Act 2015, the Well-being of Future Generations (Wales) Act 2015 and other key legislation.

Paragraph 1.11 states that sustainable development have been at the heart of planning policy since PPW was first published in 2002. However, the concept has been expanded under the Well-being Act and it requires an improvement in the delivery of all four aspects of well-being: social, economic, environmental and cultural. In the context of the application each of these issues are assessed below:

Section 5.4 of the PWW is dedicated to ensure that the growth of output and employment in Wales as a whole is not constrained by a shortage of land for economic uses.

The PWW refers to Technical Advice Note (TAN) 6: Planning for Sustainable Rural Communities. The TAN provides guidance on how the planning system can contribute to: sustainable rural economies; sustainable rural housing; sustainable rural services; and sustainable agriculture. Section 3 of TAN 6 states strong rural economies are essential to support sustainable and vibrant rural communities. A strong rural economy can also help to promote social inclusion and provide the financial resources necessary to support local services and maintain attractive and diverse natural environments and landscapes.

Planning authorities should support the diversification of the rural economy as a way to provide local employment opportunities, increase local economic prosperity and minimise the need to travel for employment.

Paragraph 5.6.8 of the PWW focuses on Rural Business Diversification. Planning authorities should adopt a positive approach to diversification projects in rural areas.

H & E Powell is a well-established family farming business which is wanting to diversify its income to protect the business from unpredictable and severe fluctuations in the commodities and meat markets therefore preserving the viability of the business for future farming generations. It will help to enable the younger generation of the family to remain on the family farm and not move elsewhere.

In our professional view the proposed development complies with the national planning policy outlined here and weight should be given to the need to support such rural businesses, particularly in ensuring their longevity through sustainable reactions to farming markets

Paragraph 2.8 of the PWW states that 'Planning policies, proposals and decisions must seek to promote sustainable development and support the well-being of people and communities across Wales'.

Agriculture plays a significant role in the vibrancy of local communities across Powys, performing a social function as well as an economic function. The farming community is a key part of community life and cohesion in our rural villages and towns. In addition, agriculture provides a key source of employment for local people, particularly in peak seasons such as the harvest.

The proposed poultry buildings will help to ensure that the farming business of H & E Powell remains viable for future generations by improving the profitability of the business and creating further employment. It will allow the business to respond more effectively to fluctuations in the poultry and meat markets. Flexibility is vital in ensuring the longevity of farming business and, as such, the proposed development should be supported.

Paragraph 3.8 of the PWW refers to the importance of environmental sustainability in the decision making process. 'Good design can help to ensure high environmental quality. Landscape and green infrastructure considerations are an integral part of the design process. Integrating green infrastructure is not limited to focusing on landscape and ecology, rather, consideration should be given to all features of the natural environment and how these function together to contribute toward the quality of places. This embraces the principles of 'ecosystems services' and sustainable management of natural resources where multiple benefits solution become an integral part of good design. In a similar manner, addressing environmental risks can make a positive contribution to environmental protection and improvement, addressing land contamination, instability and flood risk and providing for biodiversity, climate protection, improved air quality, soundscape and water resources benefits.'

It is our professional view that the proposed development complies fully with the policies contained within the PWW. The proposed development makes a sustainable contribution to Powys' rural economy and farming community, diversifying an

existing and well established agricultural business, allowing it to react to turbulence in the commodities and meat markets and remain viable for future generations of the Powell family.

The buildings are designed to be highly efficient and will incorporate modern ventilation systems. The building will include an acid scrubbing system (IPT VentMax 1200) for odour and ammonia control to ensure that emissions to air are mitigated. A comprehensive landscaping scheme will take place to mitigate any visual impact which will also increase biodiversity of the site.

5.2 Local Planning Policy

The Powys Local Development Plan (2011-2026) was adopted by Powys County Council on the 17th of April 2018 and became operative immediately.

The adopted LDP supersedes and replaces the earlier Powys Unitary Development Plan (2001-2016).

The Powys Local Development Plan consists of a Written Statement and the Proposals and Inset Maps and it sets out the Council's policies for the development and use of land in Powys. Together with national planning policy it will guide decisions on planning applications on all future development and land use planning within the Plan area during the Plan period.

The following policy contained within the LDP has been identified as being of particular relevance to the proposed development:

Objective 7 – Key Economic Sectors

To maintain and strengthen key economic sectors within Powys including agriculture and the rural economy.

The proposed poultry units will diversify the farming income for the faming partnership and enable the younger generation to remain on the family farm. It will allow the business to respond more effectively to fluctuations in the arable markets.

The Local Plan does include various references to agriculture and the agricultural economy of Powys but there is no specific policy included for agricultural development. Strategic policy SP6 states that such proposals will be considered against national policy set out in PPW and the accompanying technical advice notes, most specifically TAN6, as outlined in the sections above.

6. Air Quality, Ammonia, Health, Climate

6.1 Potential Air Quality, Health and Climate Effects of Poultry Buildings

The main issue in relation to air quality, health and climate from poultry buildings is from the ventilation fans. There will be 55,000 birds in the additional building increasing the total bird numbers on site to 110,000.

There is also potential for the development to affect air quality in the following ways:

- Dust generated during site construction - this is covered in full in Chapter 10 Amenity
- Dust generated from feed delivery - this is covered in full in Chapter 10 Amenity
- Airborne pollutants from extraction fans (ammonia) and potential effect on designated ecological sites
- Potential for odour generation from the production, storage and application for poultry manure- this is covered in full in Chapter 10 Amenity and Chapter 14 Odour
- Emissions from vehicles travelling to and from the site - this is covered in full in Chapter 9 Highways
- Emissions of Carbon Dioxide from fossil fuel sources of carbon which can affect climate change

Isopleth Ltd has prepared a detailed assessment of ammonia impacts against critical levels and critical loads. The full assessment can be seen at ***Appendix 2***.

- **Critical Levels** – a quantitative estimate of exposure to one or more airborne pollutants in gaseous form, below which significant harmful effects on sensitive elements of the environment do not occur, according to present knowledge.
- **Critical Loads** – are a quantitative estimate of exposure to deposition of one or more pollutants, below which significant harmful effects on sensitive elements of the environment do not occur, according to the present

The type, source and significance of potential impacts have been identified and detailed modelling undertaken in line with the NRW Guidance:

NRW (December 2018) Assessing the impact of ammonia and nitrogen impacts from livestock units. Technical guidance for determining environmental permit applications or responding to planning application consultations. Reference number: GN020

Also:

NRW (March 2017) assessment of ammonia and nitrogen impacts from livestock units when applying for an Environmental Permit or Planning Permission. Reference number: OGN41

NWR Modelling the concentration and deposition of ammonia emitted from intensive farming. Reference number: GN036 V1.0 December 2019

6.2 Site Setting and Operations

The site lies approximately 1.5km north-east of the centre of Rhayader and 3.4km south-west of Harmon.

Ventilation in the new house will be drawn through IPT VentMax 1200 gable end air scrubbing systems (or equivalent) reducing ammonia release by an average of 90% (the data sheet for the units indicates an achievable average value of 92%) when compared with standard emission rates for broiler birds.

The farm will be operated in accordance with best practice and BAT standards in EPR 6.09.
• A computer automatically will control ventilation and heating so that heat is not wasted by being drawn out of the building.
• Litter will be kept loose and friable. The quality will be regularly inspected to ensure it does not become excessively wet or dry.
• Temperature in the sheds will meet the health and welfare needs for the age and number of the birds. Hot water heaters will be spaced regularly within the sheds to prevent cold spots and extremes of temperature. The fans are fitted with back draft shutters to prevent drafts and unnecessary heat loss.
• Birds will be fed a minimum of three diets during their cycle, with gradually reducing levels of protein and phosphorous as bird age increases. Feed will be delivered from a UKASTA accredited feed mill and blown into bulk feed bins situated adjacent to the houses, from the feed bins the feed will be piped into the houses and distributed to the birds via a pan feeding system.
• Fallen stock will be recorded daily and securely stored in vermin proof containers awaiting regular collection by a licenced renderer.

Ammonia emissions within the buildings will be reduced through a diet based on 'ideal' protein feed and maintaining good litter conditions.

Full details of emission rates and treatment capacity of the scrubbers can be seen in the Ammonia Assessment at *Appendix 2*.

6.3 Ecological Receptors

There are several ecological receptors for consideration as set out below:

- Upper Nantserth Pasture SSSI;
- Coed y Cefn SSSI;
- Marcheini Uplands, Gilfach Farm & Gamallt SSSI;
- Rhos Rhyd-y-Ceir SSSI;
- Cwm Gwynllyn SSSI;
- River Wye (Upper Wye) SSSI;
- Cerrig-Gwalch SSSI;
- Carn Gafallt and Elenydd SSSI;
- Caeau Wern SSSI;
- New House Meadow SSSI;
- Cae Coed Gleision SSSI
- Cae Cwm-bach SSSI;
- Black Brook Pastures SSSI;
- Elenydd-Mallaen SPA;
- River Wye / Afon Gwy (Wales) SAC; and
- Coetiroedd Cwm Elan / Elan Valley Woodlands SAC.

Details of these sites and citations can be seen in the Ammonia Assessment at *Appendix 2*. There are a number of Ancient Woodland sites within 2km of the proposed poultry building. These are detailed in the Ammonia Assessment.

6.4 General Approach

NRW guidance GN 020 and OGN 41 has been followed for the ammonia assessment in relation to sites of European and National interest (i.e. 'Natira 2000' sites). Predicted ground level concentrations of ammonia, nutrient nitrogen and acid deposition are compared with relevant air quality standards and guidelines for the protection of sensitive habitats. For local sites and ancient woodland, Guidance intensive farming risk assessment for your environmental permit (May 2018) is used.

6.5 Critical Levels

Critical levels for the protection of vegetation and ecosystems are specified within relevant European air quality directives and corresponding UK air quality regulations.

6.6 Critical Loads

Critical loads are set for the deposition of various substances to sensitive ecosystems. Predicted contributions to acid deposition and nitrogen deposition have been calculated and compared with the relevant critical load range for the habitat types associated with each designated site as derived from the UK Air Pollution Information Systems (APIS) website. The contribution to critical loads for Nitrogen deposition are recorded as KgN/ha/yr. Deposition rates are converted to units of acid equivalents (Keq/ha/year), which is a measure of how acidifying the chemical species can be, by dividing the dry deposition flux (kg/ha/year) by standard conversion factors.

Deposition rates were calculated using dispersion modelling results processed by the following empirical methods recommended by the Environment Agency in AQTAG. The calculation for dry deposition flux is detailed at section 3.3 of the Ammonia Report and the equation used to calculate it is as follows:

- *Dry deposition flux = ground level concentration x deposition velocity*

Information in relation to applied velocity for ammonia can be seen in the Ammonia Assessment.

6.7 Limits and Significance

OGN41 presents thresholds for livestock developments in relation to European sites (RAMSAR, SPA, SAC) and SSSIs:

- Threshold of insignificance (%of the designated site Critical Level or Load) **1%**
- Upper threshold % of the designated site Critical Level or Load) **8%**

In the case of Local sites such as Sites of Special Interest to Nature Conservation (SINC) and Ancient Woodlands, Natural Resources Wales apply a limit for PC of up to 100% of Critical Level or Critical Load, i.e. the upper and lower thresholds are the same (100%).

Where process contributions, considered in isolation, are up to 1% of the designated site Critical Level or Load, then it should be determined that there is no significant environmental effect/no likely significant effect/damage to scientific interest. This also includes cases where there is a betterment, i.e. that impacts are below 0% of

the existing. In cases where there is a betterment, i.e. that impacts are below 0% of the existing then no in-combination assessment is required.

6.8 In Combination Range

Where process contributions, considered in isolation, are between 1% and 8% of the designated site Critical Level or Load, an in-combination assessment is required. Should the in-combination process contributions be between 1% and 8% of the designated site Critical Level or Load then it should be determined that the application would cause no significant environmental effect/likely significant effect/damage to scientific interest.

Within the range between the lower and upper thresholds, whether or not the impact is deemed acceptable is at the discretion of Natural Resources Wales.

For units that are assessed as exceeding the 8% threshold either alone, or in combination, the applicant will be required to submit a plan as part of their permit application detailing how the ammonia emissions and nitrogen deposition will be reduced.

6.9 Consistency with other Applications

The approach taken in this report is consistent with other recent schemes such as the first broiler unit at Llwyngwilym Farm (application ref: 18/0463/FUL). The initial building also proposed the use of IPT VentMax 1200 Acid Scrubbers (or equivalent) for ammonia mitigation. The Powys Council ecologist for the scheme reviewed the NRW consultation response and commented as follows for that scheme:

'The results of the modelling demonstrate that the use of the ammonia scrubbing units would reduce the predicted process contributions from the proposed development to below the current lower threshold for Statutory designated sites - 1% of the precautionary Critical Levels. It is therefore considered that the potential impacts of the proposed development to statutory designated sites as a result of installation of the proposed air scrubber unit would be within the levels considered to be acceptable by recognised current guidelines. NRW have reviewed the information provided within the Report with regards to statutory designated sites, in their response dated 20th February 2020 NRW have confirmed that in light of the proposed Ammonia Scrubber technology which has been identified to be installed in the proposed development the predicted process contributions would be reduced to below the thresholds applied to determine potential impacts to statutory protected sites under which the application has been considered and are therefore would be considered to be acceptable. NRW have advised that the LPA should considered inclusion of an appropriately worded planning condition to secure implementation and maintenance of the ammonia air scrubbers.' – 22nd May 2020

On this basis it can be seen that both Powys Council and NRW have accepted the use of IPT VentMax 1200 Acid Scrubbers for mitigation of ammonia from broiler units and that the 'the current lower threshold for Statutory designated sites' should be taken as 1% of the precautionary Critical Levels. Where the potential impacts are below 1% the application would be considered to be acceptable in air quality (ammonia) terms and this is consistent with Guidance OGN 41 as described above.

The selection of a scrubber will be a commercial decision taken at the tendering stage prior to construction of the units. There are several suppliers of scrubbing technology for poultry buildings including IPT, DraperVENT, JF McKenna and Big Dutchman. This report assumes that, in the event that an alternative scrubbing system is chosen for the final design, the performance would be equivalent to (or better than) that of the IPT VentMax system in relation to ammonia scrubbing performance.

6.10 Model Inputs

The ammonia assessment is based on the proposed building holding an average of 55,000 birds in a single shed of 115.8 metres long by 24.4 metres wide with a roof pitch of 15°, internal eaves height of 2.5 metres. This is identical to the recently approved building.

The proposed poultry unit will produce standard birds, based on a 35-38 day growing cycle, with an empty period at the end of each cycle for cleanout and preparation of the buildings for the incoming flock. The unit will operate with approximately 7.5 flocks per annum.

During the growing cycle temperature is controlled within the buildings. The buildings are pre-warmed to a temperature of approximately 33ºC on day 1 of the cycle typically reducing to approximately 22ºC at clear-out of the crop.

6.11 Assessment Input Factors

The full assessment input factors have been described in the ammonia assessment and include building downwash/entrainment (movement of air over and around buildings and other structures), local wind speed and direction, meteorological data, topography, emission rate and maximum scrubber treatment capacity.

6.12 Results: Critical Levels

The full results are set out in the ammonia assessment and summarised below:

Impacts at sites where the critical level applies are predicted to be (well) below 1% of the critical level at all of the sites identified. The impact is therefore insignificant at these sites, either alone or in combination with other ammonia sources.

6.13 Results: N Nitrogen Critical Load

Full results are set out in the ammonia assessment and summarised below:

Impacts at sites where the nutrient nitrogen critical load applies are predicted to be below 1% of the critical load at all of the sites identified.

6.14 In-Combination Effects

NRW and Powys Council guidance requires an assessment of in-combination effects where the Process Contribution is >1% from the scheme at a designated site of European or National interest. In this case, the impacts at all sites are below 1% and therefore no further in-combination assessment is therefore required in this case.

6.15 Ammonia Conclusions

The ammonia assessment indicates that:

The assessment shows that impacts at all designated ecological sites will be below 1% of the relevant critical level and nutrient nitrogen critical load and are therefore below the thresholds NRW apply in their assessment of potential impact on protected sites. The impacts of ammonia from the proposed development site are therefore predicted to be acceptable either alone or in-combination with other schemes according to Powys and NRW assessment criteria. As such, provided that the mitigation measures are installed then the development is unlikely to adversely impact protected sites.

As such it is considered that, subject to the mitigation measures being installed, the proposed development would comply with the requirements of Powys LDP policy DM2 and TAN5.

6.16 Carbon Dioxide

The proposed poultry development will result in very low emissions of carbon monoxide. Most carbon monoxide emissions associated with poultry houses are from the fuel used to heat the buildings. However, the buildings will be heated using biomass boilers utilising a renewable energy source which is encouraged by Government policy.

Any carbon dioxide emitted from the poultry development would also be off-set due to the reduction in emissions from transporting poultry meat from elsewhere. Increasing the amount of home produced poultry meat will reduce the need for importing meat from abroad and hence help to reduce the level of transportation required.

6.17 Overall Conclusions

The nature of the receptors, nature of the development, and environmental controls built into the development mean that emissions to air will not have a significant effect on air quality or the health of local people or designated wildlife sites. No further mitigated measures are therefore considered necessary.

7. Landscape/Visual and Historic Impact

7.1 Introduction and Assessment Overview

The proposed development involves the construction of a single poultry building and associated infrastructure to house 55,000 birds. The site for the proposed poultry building is adjacent to an approved but yet to be constructed poultry unit also housing 55,000 birds. This chapter seeks to assess the potential landscape/visual and historic impact of the additional buildings.

It was considered in the previous application (ref:18/0463/FUL) that the site for the existing building was chosen due to its ability to be well screened by existing hedgerows and woodland and that this would be improved by additional planting and hedgerow management. The Delegated Report set out the '*whilst DM4 requires a LVIA where there is a significant landcape/visual impact Officer consider that whilst the proposed development would change the existing site it would be a moderate impact that would be further alleviated by additional landscaping. As such it is not considered necessary to require a LVIA*'.

Condition number 10 to Decision Notice sets out that '*Notwithstanding the details submitted, prior to the commencement of development a detailed Native Landscaping Planting and Management Scheme shall be submitted to and agreed with the Local Planning Authority. The approved scheme shall be implemented in the first planting season following occupation of the development. The submitted Native Landscaping Planting and Management Scheme shall include the use of native species, details of the planting specification - the species, sizes and planting densities - and a timetable for implementation and future management to ensure good establishment and long term retention. The measures identified shall be adhered to and implemented in full and maintained thereafter'*.

In relation to build heritage the Delegated Report set out that '*the closest listed buildings to the site are Barn and Cowhouse Middle Nantserth and Crud yr Awel, both grade II listed buildings, located approximately 1km from the site. Due to the location of the listed buildings some 1km from the site, the topography of the land, intervening roads and landscaping it is considered that the proposed development will not harm the setting of these heritage assets. The proposed development is not intervisible with the listed buildings and is not located in any views of the listed buildings. In considering the existing developments in the wider area, it is considered that the existing topography and landscaping and proposed landscaping ensures that the development will not either individually or cumulatively harm the setting of listed buildings*'.

A Heritage Impact Assessment has been prepared for the proposed development and can be seen at ***Appendix 3***. The methodology in this report is based upon Cadw's Heritage Impact Assessment in Wales and Setting of Historic Assets in Wales which sets out staged guidance on identifying historic assets, analysing the setting, evaluating the potential impact and considering changes or mitigation strategies to the development to improve any potential impact. The HIA has been written in the context of all relevant legislative, planning policy and guidance.

7.2 Landscape Character

The Site is located to the north-east of the town of Rhayader. The landscape is one of gentle smooth upland hills with the landscape becoming more rugged to the west of Rhayader. The site is set within a sloping grassland field approximately 180 metres from the B4518. The surrounding area is mostly agricultural with many grassland fields. Hedgerows form most of the field boundaries with many hedgerow trees. There are also several small and some larger blocks of woodland.

The application site is located within the following aspect areas;

Geological Landscape – Rhayader RDNRGL649 – Moderate
'Undulating farmland passing into rocky ridge north-west of Rhyader, with higher ground to the north-east... Dominated by ''Rhyader Pale Shales'' but also includes other, contiguous mudrock-dominated units up the level of the first major sandstone dominated formation, the Glanyrafon Formation'

Landscape Habitats – RDNRLH007 – Moderate
'Most of the area uninteresting improved grasslands, but does include 2 SSSIs one hay meadow - Caeau Wern and one probable Molinia rush pasture - Upper Nant serth... Area around Roman fort owned by Gilfach Rhiw farm is of high value.'

Visual and Sensory – Rolling hills, between Ithon & Wye - Moderate
'Single large area between lower Ithon & upper Wye valleys. Includes some distinct hills & some recent field enclosures. Gently rolling lowland hills & valleys with strong pastoral field patterns, wooded watercourses and scattered trees & small woodlands. Mainly scattered farms.'

Historic Landscape – Llwyn-barried RDNRHL120 – High
'Undulating lowland with mixed field pattern, mostly defined by hedges, and small isolated patches of broadleaved woodland on steeper slopes and along watercourses. Scattered medium to large sized farms of late medieval and early post-medieval origin.'

7.3 Proposed Development

Planning permission was granted dated 30th June 2020 (ref: 18/0463/FUL) for the erection of a broiler unit, creation of access and all associated works at Llwyngwilym Farm, Rhayader, Powys, LD6 5NS. This application seeks to add a second poultry building on the site. The total number of birds would double from 55,000 to 110,000.

As with the approved building the proposed building will measure 115.8m x 24.4m with an internal eaves height of 2.5m and ridge height of 5.1m. The tops of the ventilation chimneys will be at 5.67m. Feed bins will be situated between the buildings and have a height of 8.3m. There will be a yard area and access around the buildings. The buildings will be specifically designed and constructed for broiler rearing and be fully compliant with the latest welfare standards.

The buildings benefit from natural topography and the design will be low profile and the materials of the roof and sides will be clad with metal sheeting in the colour of Juniper Green to help blend in with its natural landscape (or a colour to be approved by the LPA).

7.4 Potential for Landscape and Visual Impact

The proposed poultry building is of a large scale but will be situated adjacent to the already approved poultry unit. It is considered that the additional buildings will have a limited impact on the landscape due to its chosen siting. the intervening topography and existing landscape features largely screen the proposed development from nearby sensitive receptors. Poultry buildings are fairly low profile anyway and given the topography of the land their profile is further reduced which helps to reduce potential landscape and visual impact. The Juniper Green cladding will also help to integrate the proposed building into the landscape.

Although the proposed additional building would involve the loss of a further area of agricultural land it is well related to the already approved building and there will be a minor landscape impact. Due to the siting of the additional building and the character of the landscape it is considered that the development would not have a significant adverse direct impact on the site or the landscape character of the area.

There are no residential dwellings directly overlooking the site and views from nearby residential dwellings are restricted by the topography of the area and intervening landscape features. The site is not visible from Rhayader. The proposed additional building would also appear in context with the approved building.

There are public rights of way in the vicinity of the site. Many of these would have limited, distant views of the buildings. The only right of way with a direct view of the poultry site is footpath number 150/157 which passes to the south of the approved building. However, the proposed additional building would be behind the approved building as the path directly passes the site. Further from the site the proposed additional building would be seen in context with the approved building. Only a short section of footpath would be impacted and considering this represents an extension to an already approved poultry unit it is considered that the overall effect on visual amenity from the users of the right of way would be minor.

There would be limited views of the additional building from the B4518 as it would be behind the approved building.

It is considered that the proposed development would not have a significant landscape or visual impact.

7.5 Potential Heritage Impact

A Heritage Impact Assessment (HIA) has been prepared for the proposed additional building. Planning Policy Wales (PPW) defines a historic asset as "*An identifiable component of the historic environment. It may consist or be a combination of an archaeological site, a historic building or area, historic park and garden or a parcel of historic landscape. Nationally important historic assets will normally be designated.*" The full methodology can be seen in the HIA. Setting can be defined in TAN 24 as "*the surroundings in which it is understood, experienced and appreciated embracing present and past relationships to the surrounding landscape*".

An advisory study area of 1km is has been used due to the proposals to highlight any historic assets of importance that may be affected by the development. The HER does highlight historic assets notably traditional farm buildings at Coed-yr-ardd and Ffos-mascal. The site is not within a Registered Historic Landscape, however the historic core of Rhayader is a conservation area. There are no listed buildings or scheduled monuments within or adjacent to the study area. There are a selection of listed buildings within the settlement of Rhayader however, these will not be assessed due to separation distance.

<u>Heritage Impact</u>

The topography of the area is undulating with the site itself in a ridge with views to the north and south-west where the land rises again. Due to the nature of the landscape the sparse built environment is visible in the distance, however this generally consists of agricultural sheds akin to those proposed as part of this application and contribute to the rural character. The largest collection of historic assets looking to the south-west benefits from existing tree coverage.

There are no known identified historic assets on the site and none outside the site which are directly affected. Non-visual elements of the setting remain as per the previously approved application and will not compromise the setting of the historic assets.

There is no physical or functional relationship between the historic assets highlighted within the study area, most of which are former remains of historic assets, e.g. traditional farmsteads that have been significantly altered or demolished and have had new agricultural sheds built on the same site as the former farmstead. The significance on these assets is therefore generally considered to be low. In addition, intervisibility is limited due to the natural topography and tree coverage and it should be noted that views between the Site and historic assets is not a planned view.

The wider setting comprises of isolated farmsteads and structures of mixed heritage value, including other C20 agricultural sheds on the hillside, evoking the historical past and the continued land-use of the area and its development over time.

The Site benefits from extensive existing hedgerows, woodland and the natural topography which screen the development from historic assets including the Conservation Area. The Site will be sensitively landscaped to avoid a harmful impact to the setting. The building will be low profile and painted juniper green to sit as seamlessly as possible into the natural environment and match the adjacent unit.

Cadw and CPAT were both consulted on the approved application and both offered no objection (18/0463/FUL).

It is concluded in the HIA that there are only no historic assets or archaeological features on the Site or within proximity of the Site that could be affected. Consultees Cadw and CTAP both concurred in the previous approval.

The wider setting of the Conservation Area will not be impacted due to the distance and existing topography of the Site.

The proposals will be of neutral impact to their agricultural, rural setting, reduced by a sensible mitigation strategy to ensure the development sits sensitively into the existing environment.

7.6 Conclusion

Due to the profile of the proposed development, surrounding topography and landscape features there will not be any significant landscape or visual impact.

There will not be any significant impact on historic assets or archaeological features or the wider historic setting.

8. Highways

8.1 Introduction

The environmental impacts of the proposed development in relation to traffic have been assessed. In general, the following information should be included within a planning application of this type:

The existing situation:

- *What is the existing farm operation and current traffic movements?*
- *Will those traffic movements change if the poultry units are built?*

The proposed development:

- *What are the likely traffic movements including vehicle type that would be generated by the broiler units? (these should be broken down into bird deliveries / collection, feed deliveries, removal of waste, etc.)*
- *Over what periods will these movements take place? How has this been assessed?*
- *What is the likely route to the site for HGV traffic?*

8.2 Highway Technical Note

A Highways Technical Note has been prepared by Berrys and has been included at ***Appendix 4*** of this report.

8.3 Location

The proposed development site is located at land forming part of Llwyngwilym Farm, approximately 1km to the north east of Rhayader. The proposed development site is located on existing agricultural pasture land to the north east of the B4518 St Harmon Road. The development is proposed to be accessed from an improved existing private access serving the consented broiler unit.

8.4 Outline

The supporting Technical Note explores the access, traffic and transportation aspects of the proposed development. The foreseeable traffic and transport

impacts arising from the proposed development is examined in the Technical Note along with any proposed mitigatory or improvement measures.

The supporting Technical Note has been prepared by Richard Harman, an Incorporated Engineer and Fellow of the Institute of Highway Engineers with over 16 years industry experience of working in both the public and private sector.

8.5 Site Access and the Highway Network

The proposed development site is accessed directly from the B4518 St Harmon Road county road, which links to the A470 Trunk Road approximately 1.25km to the south west of the site at Rhayader. To the north east the B4518 connects a number of smaller settlements of Mid-Wales but does not provide a wider strategic function. As a consequence, the B4518 carries only a low number of daily vehicle movements; whilst no traffic counts have been carried out on the route, it is estimated that less than 2000 2-way vehicle movements pass the site in a 24-hour period.

Given the nearby connectivity to the strategic road network, it is considered that all traffic for the proposed development will travel to and from the site via the A470 at Rhayader. Therefore, the development traffic will only travel a relatively short distance on the local road network, which is traffic calmed along the urban section of the route at Rhayader. The junction between the B4518 and the A470 Trunk Road at Rhayader is of a sufficient standard for movements by heavy goods vehicles (HGVs) and no issues were raised by the local highway authority over this access route during the consideration of the previous planning application for the single broiler building.

Between the site and its junction with the A470, the B4518 generally has a width of at least 6.1m and is of a suitable standard to accommodate movements by HGVs.

Crashmap has been consulted which shows that no personal injury collisions have been recorded on the local road network surrounding the site in the latest five-year period.

8.6 Development Trip Generation

Traffic figures for the proposed development have then been derived on a ‘first principles’ basis. Baseline traffic movements are based around the consented, but unimplemented broiler unit scheme. Any impacts on any other wider farm movements arising from the development will also be discussed.

The proposed development will be operated by the applicant who lives and works on the wider family farm holding located to either side of the B4518. For some operations staff will need to travel to the site. By nature, farming operations are located in rural areas generally not well served by public transport and hence farm

workers are normally reliant upon private vehicles for transport. However public transport options do exist in the form of several local bus routes passing through Rhayader and the B58 Rhayader to Llanidloes service passes by the site at various times Monday to Friday. Also, as the site is located only 1km from Rhayader, employees could possibly walk or cycle to work. Therefore, travel to the development site by more sustainable means is feasible despite the rural location.

No detailed vehicle movements were provided for the previously consented scheme and therefore these have been derived for the baseline situation. The existing consent is for a single 55,000 broiler building, with the proposed scheme providing an additional building to double the capacity of the site. The broiler units will operate on a concurrent 48-day cycle period including a 10-day period for clean down and preparing the building for new flocks. This equates to 7.6 flocks per annum being produced by the farm.

Both the consented and proposed scheme will retain the waste bedding and droppings as fertiliser for use on the wider farm. This will be transported around the farm using tractors and trailers. This will reduce the number of movements to the wider farm site to replace the delivery of imported fertiliser, although this potential saving has not been accounted for in the assessment.

The broiler buildings will be heated via biomass boilers fuelled with woodchip or biomass pellets, however back up LPG boilers will be installed. The traffic assessment has been based on the buildings being heated by woodchip biomass, as this will involve the greater number of movements. It is assumed that woodchip will be delivered to the site by 100m3 ‘walking belt’ articulated goods vehicles.

Deliveries of day-old chicks, bedding and food along with broiler collections will generally be carried out by 16.5m articulated HGVs as per the existing operations. Staff will travel to site using light vehicles throughout the cycle for various operations including inspections, maintenance and for depopulation. Collections of fallen stock will occur weekly throughout the growing cycle and will be by rigid HGVs or large box vans. The monitoring and day-to-day management of the units is carried out by the applicant and their staff, who are already working at the farm and are also carrying out other operations and tasks.

The baseline and proposed traffic movements can be seen in the tables below:

Operation	Vehicle type	Total 2-way movements	When in cycle
Bedding delivery	Articulated HGV	1	Day 48
Chick delivery	Articulated HGV	1	Day 1
Feed delivery	Articulated HGV	7	Throughout
Fuel delivery	Articulated HGV	2	Days 1, 18
Mortality collection	Box van	6	Throughout
Bird thinning	Articulated HGV	2	Day 30-31
Bird depopulation	Articulated HGV	5	Days 37-38
Manure removal	Tractor and trailer	8	Days 39-41
Ongoing maintenance and inspections	Light vehicles	10	Throughout
TOTAL PER CYCLE		**42**	

Table 9.1 Baseline Conditions

Estimated traffic movements predicts a total of 42 movements would be made on the network over the 48-day cycle period. Considering the 7.6 flocks per annum produced, this equates to 319 movements on the network throughout the year. The peak movements will occur on days 39 to 41 for the clearance of litter and manure removal from the shed. These will be local movements to the farm by tractors and trailers.

The total movements for the proposed development, including the converted baseline approved building. These have been based on the proposed site capacity of 110,000 broilers per cycle.

Operation	Vehicle type	Total 2-way movements	When in cycle
Bedding delivery	Articulated HGV	2	Day 48
Chick delivery	Articulated HGV	2	Day 1
Feed delivery	Articulated HGV	14	Throughout
Fuel delivery	Articulated HGV	3	Days 1, 18
Mortality collection	Box van	6	Throughout
Bird thinning	Articulated HGV	4	Day 30-31
Bird depopulation	Articulated HGV	10	Days 37-38
Manure removal	Tractor and trailer	16	Days 39-42
Ongoing maintenance and inspections	Light vehicles	12	Throughout
TOTAL PER CYCLE		**69**	

Table 9.2 Development trip generation

Notes: 2-way movements per cycle (2-way means one combined trip to and from the development).

The proposed increase in capacity from 55k to 110k broilers per cycle is predicted to increase the number of traffic movements by 64% from 42 to 69 two-way movements, over the 48-day cycle period. This equates to an additional 27 vehicle movements on the network for each cycle. Considering that the site will be able to deliver 7.6 flocks per annum, this will lead to an overall total of 524 vehicle movements on the network throughout the year.

In numerical terms the removal of litter and manure represent the peak movements for the overall poultry operations, however these will be by tractors and trailers on

the local network and are likely to be spread over one to three days, depending on resources. Therefore, it is arguable that the movements for the depopulation operations, where fully grown broilers are removed from the site could be considered as being the peak concentration of movements. Due to animal welfare standards and practical requirements, the thinning of the flock and full depopulation to collect fully-grown birds commences in the early hours of the morning, normally around 02:00. Therefore, catching staff from the meat company will arrive at the site (normally via a minibus vehicle) around this time, as will the first articulated HGV transporting the broilers to the slaughterhouse. Each HGV takes up-to one-hour to fill, so one vehicle will generally arrive and leave the site each hour. The vehicles are timed so that an empty vehicle will arrive at the site prior to the next full vehicle leaving, to ensure there is no lost time in the process. Sufficient yard areas have been designed into the scheme for concurrent HGVs during depopulation. This means that HGVs should not have to pass on the nearby network.

8.7 Development Traffic Impact and Mitigation

Considering the reasonably low number of vehicle movements on the adjacent public highway network, it is considered that the additional vehicle movements will not have any detrimental impacts to the safe and efficient operation to the public highway. The transport assessment concludes that given the direct access from the site to a numbered road, the development is ideally located from a transportation perspective.

8.8 Conclusions

This transport note has considered the proposed development at Llwyngwilym Farm, Rhayader, to provide an additional broiler building in addition to the existing approved scheme for a single building. The proposed scheme under consideration will increase the site capacity from a flock of 55k to 110k broilers.

The site benefits from a direct access to the B4518 which is due to be improved as part of the previous consent. The A470 strategic trunk road is just a 1.25km travelled distance from the site. All traffic associated with the proposed development therefore has a good means of access with the wider road network.

As the development site is located just 1km to the north east of the town of Rhayader, a number of options do exist for more sustainable travel to the site for staff. However, the development will principally be operated by the applicant who lives and works on the farm.

The consented scheme is predicted to generate a total of 42 two-way vehicle movements over the 48-day cycle period. It is predicted that the proposed

additional broiler building will increase these movements by 64% to a total of 69 movements per cycle.

It is considered that the development will not lead to any road safety or capacity issues on the nearby road network and therefore no local highway mitigation works should be required nor justified.

9. Amenity

9.1 Introduction

Poultry developments do have the potential to affect amenity issues in the surrounding area. The following issues have been assessed in relation to the development; dust, odour, flies and vermin. Noise, odour and air quality issues have been covered in separate chapters. The potential for nuisance caused by these issues could potentially impact on local population.

Statutory nuisances are regulated by Part III of the Environmental Protection Act (EPA) 1990. The powers allow for action to be taken by local authorities or individuals against statutory nuisance that exists or is likely to occur or recur. Statutory Nuisances include smoke, fumes or gases emitted from premise, any dust, steam, smell or other effluvia arising on industrial, trade or business premises, which are prejudicial to health or a nuisance. There is a defence of using Best Available Technique (BAT) to prevent the nuisance or counteract its effects together with reasonable excuse. The granting of planning permission is not a defence.

When considering the location of new development, the effects (including cumulative) of pollution on health, the natural environment or general amenity, and the potential sensitivity of the area or proposed development to adverse effects from pollution, should be taken into account.

The types and sources of potential nuisances to be identified and assessed against the potential sensitivity of individual receptors, based on the nature and proximity to the activity, and also general wind direction and nature of the receptor. The use of risk assessment tables to identify sources, receptors and pathways in relation to potential amenity issues is common practice and used when assessing Environmental Permit applications. Risk Assessment tables can be seen at ***Appendix 5***.

9.2 Baseline Environment and Sensitive Receptors

It is generally accepted that a 400 metre zone around intensive livestock development is the threshold for nuisance complaints relating to airborne emissions. The closest potentially receptive sensors can be seen below (based on site area not emissions points which may be further away):

Property	Distance to site boundary	Comments
Residential		
Bryn Pedol	230m e	
Beli Gof Workshop	190m s-e	
Ffos Mascal	334m s-e	
Coed yr Ardd	230m s-w	
Coed Cochion	375m n-w	
Commercial/Services		
None		
Public Rights of Way		
Footpath 150/157		
150/157	70m	Passes to s-e of site on far side of existing building
Public roads		
B4518	220m s-w	

The prevailing weather/wind direction is from the west-south-west direction.

9.3 Mitigation Measures

Standard noise, odour, dust, vermin and fly management controls will be put in place. These are integral to the design of poultry buildings and management operations will be as the best available technique. The site will operate under an Environmental Permit (EP) issued by NRW and operating under an EP demonstrates that the site has demonstrated that 'best available techniques' will be used to minimise emissions to the receiving environment.

9.4 Manure Management (Odour and Flies)

The chicken manure produced in the poultry buildings will all be taken off site as and when it is cleared to be stored in a sealed manure store before spreading on the applicants arable land.

Flies should not be a problem on well managed and efficient poultry sites, primarily as most flies and larvae hatching in the litter are eaten by the hens. Flies can however, be a problem outside the buildings when a site is not managed efficiently as set out below:

Feed storage – flies will be attracted to animal feed as breeding areas if it is stored in unsuitable buildings or storage bins. This will be designed out of the proposed development at Llwyngwilym by installing modern feed storage systems to meet the requirements of the Food Hygiene Regulations and the 'Red Tractor' Farm Assurance Standards.

Manure storage – this is important when preventing fly infestations as it can be attractive as a breeding site. By reducing moisture levels in the manure (to around 30%) flies will not find it suitable for laying eggs. Frequent inspections of storage sites are required to ensure that there is no fly activity as even manure that is produced, transported and delivered in a dry, fly free condition can sometimes become infested.

The litter will be removed at the end of each production cycle. It will be cleared out by specialist contractors using small machines such as bobcats and loaded into trailers directly inside the doors. The litter is taken straight off the poultry site to be stored in a sealed manure store.

Manure storage – this is important when preventing fly infestations as it can be attractive as a breeding site. By reducing moisture levels in the manure (to around 30%) flies will not find it suitable for laying eggs. Frequent inspections of storage

sites are required to ensure there is no fly activity as even manure that is produced, transported and delivered in a dry, fly free condition can sometimes become infested. A manure management/contingency plan will be prepared as part of the permit application detailing what measures will be put in place to ensure there are no ecological or amenity impacts from the storage of manure. There is an existing manure management plan for the approved building, and this will be updated to take account of the additional manure produced by the increase in bird numbers.

The manure will be stored in a sealed manure store. Notwithstanding this if any temporary stockpiles area required, they will be carefully managed and monitored. Any stockpiled manure will be checked once a week between April and October inclusive to ensure there is no fly activity in the manure. If on these inspections, any fly larvae are found in the manure, immediate steps will be taken to control the fly and larvae populations. The methods to be used for the control are those recommended in the 'Code of Practice for the use of Poultry Manure'. This includes keeping records of inspections, covering the stockpiles at the first sign of fly activity (sheeting raises the temperatures which kills any flies and larvae), ensure the manure remains covered for at least 10 days, and during the summer months of May to September not to store manure near to residential areas.

The main source for fly nuisance is the manure storage and the pathway is through self-dispersal through flight with the potential impact being general annoyance, the need for control and potential spread of disease.

9.5 Vermin

The main issue with regard to the potential for vermin on the site is the storage of feed. This will be limited however, through installing modern feed storage systems to meet the requirements of the Food Hygiene Regulations and the 'Red Tractor' Farm Assurance Standards. The site will also be checked regularly for the presence of any animals that could considered to be vermin. All employees will be fully trained to deal with vermin control and further advice can be sought from Powys County Council if required.

The main source for vermin is feed storage and the pathway is self-dispersal over land. The potential impact is general annoyance, the need for control and potential spread of disease. Mitigation will include storage of feed in sealed containers, maintenance of the feed containers to prevent deterioration, and fast removal of any feed spillages.

In conclusion, vermin are only a potential risk in close proximity to the source and it is expected that no significant vermin impacts will result from the proposed poultry development. The separation distance from the site and potential receptors

will be too far to cause any loss of amenity and the development will therefore not have a significant impact.

9.6 Dust and Air Quality

The main sources of dust from poultry buildings are the birds themselves, the food and litter. Dust levels have found to vary depending on the number of birds, their age and the activity levels within buildings. The particle size of the dust will also vary although in general, particles smaller than 2 microns (2 um) will account for around 70% of the number but only 5% of the mass. Larger particles of greater than 5 um will account for less than 10% in number but between 40% and 90% of the dust mass. Dust particles can be emitted into the atmosphere through the ventilation systems so potential for impact is greater during the summer months when fans will be operating at a higher rate. However, the ammonia scrubber unit will be fitted with dust filters which will reduce dust emissions by up to 90%. In addition, the larger dust particles will tend either to not get into the ventilation fans, or if they are expelled from the building will be immediately deposited on the ground. Smaller particles can be carried in the wind. As the distance from the site becomes greater, the concentration of dust will fall to a level below air quality guidelines and become indistinguishable from normal background dust levels.

There is the potential for dust from vehicles moving over dusty surfaces and the wind blowing over dusty surfaces as well as through the ventilation system. The pathway for the transportation of dust particles is the wind with greater emissions of dust in stronger winds but being countered by greater dilution. Potential impacts of dust will be respiratory tract/eye irritation or the perception of health effects for sensitive receptors within 400m of the site.

There are few receptors close enough to be significantly affected by dust as course dust will tend not to travel in significant volumes further than 100m from the source due to reductions in concentration and deposition with distance. There are no residential dwellings within this distance. The prevailing wind will also take any dust particles away from many of the closest properties. A short section of footpath 150/157 is within this distance. Additional mitigation available includes internal handling of manure and good practice during construction such as dampening down surfaces.

Impact from vehicles will not have a significant impact as the poultry vehicles will not considerably alter the baseline level of dust. The greatest dust emissions are likely to arise during the construction and decommissioning phases for a short period of time and it is considered that no significant impact in terms of dust nuisance will occur. A dust management plan is required as part of the permitting process. A dust management plan was prepared in relation for the approved building and will be updated to take account of the additional bird numbers.

With good site management there should not be any significant impact from dust.

9.7 Conclusion

The risk assessment suggests that significant adverse impacts on local amenity as a result of the proposed poultry development are unlikely.

There are only limited potential receptors within the 400 metre zone. The prevailing wind is from the west south west, which will take any dust away from most of the closest receptors. The scrubber system to be used also has dust filters fitted.

Full odour and noise impact assessments have been carried out and the results set out on in separate chapters.

There are limited receptors close enough to be significantly affected by dust as course dust will tend not to travel in significant volumes further than 100m from the source due to reductions in concentration and deposition with distance. The greatest dust emissions are likely to arise during the construction and decommissioning phases for a short period of time and also vehicle movements. It is considered that no significant impact in terms of dust nuisance will occur.

Manure will be taken straight off the site to be stored in a sealed manure store. Measures will be taken to prevent any odour or fly nuisance.

10.Ecology and Biodiversity

10.1 Introduction and Legislation

Schedule 4 of the Environmental Impact Assessment (EIA) Regulations states that an Environmental Statement (ES) should include a description of the aspects of the environment likely to be significantly affected by the development, including flora and fauna. An Ecology Assessment carried out by Turnstone Ecology Ltd can be seen at ***Appendix 6*** of this report.

The Preliminary Ecological Appraisal (PEA) has been completed in connection with this proposal. A site survey was carried out on 13th August 2020 and consisted of a Phase 1 Habitat Survey and Protected Fauna Survey and Habitat Suitability Assessment.

A range of EU and UK legislation offers statutory protection to species and habitats which Local Planning Authorities have a duty to consider whilst determining planning applications. The following EU directives are relevant to protected species, habitats, and designated sites:

- The EC Habitats Directive (92/42/EEC)
- The Birds Directive (79/409/EEC)
- EU Water Framework Directive (2000/60/EC)

Much of the EU legislation is transported into domestic legislation with respect to protected species and habitats, including:

- The Conservation of Species and Habitats Regulations 2010 (as amended)
- The Wildlife and Countryside Act 1981 (as amended)
- The Protection of Badgers Act 1992
- The Natural Environment and Rural Communities Act 2006
- The Countryside and Rights of Way Act 2000

10.2 Planning Policy

Section 40 of the Natural Environment and Rural Communities Act 2006, places a duty on all public authorities in England and Wales to have regard, in the exercise of their functions, to the purpose of conserving biodiversity. A key purpose of this

duty is to embed consideration of biodiversity as an integral part of policy and decision making throughout the public sector, which should be seeking to make a significant contribution to the achievement of the commitments made by Government in its Biodiversity 2020 strategy.

TAN 5 Nature Conservation and Planning sets out that for EIA development it is essential to ensure that:

- development proposals in outline planning applications are sufficiently prescribed, and that environmental impact statements fully address all likely significant environmental effects, in order to avoid the procedures applying again at the approval of reserved matters stage;

- the EIA process is used to full advantage to identify opportunities for the enhancement of nature conservation interest, for example, through the design, location, scale or management of measures mitigating other environmental effects such as noise attenuation bunds, screen planting or provision of buffer zones.

The Adopted Powys Local Development Plan 2011-2016 in Policy DM2 – The Natural Environment sets out that 'development proposals shall demonstrate how they protect, positively manage and enhance biodiversity and geodiversity interests including improving the resilience of biodiversity through the enhanced connectivity of habitats within, and beyond the site'.

10.3 The Development Site

The site is located in a rural setting and is accessed from the B4518 to the south-east of the site. The northern, southern and eastern field boundaries are formed by hedgerows and the western boundary is formed by a combination of fencelines, hedgerow and scattered trees. Beyond the immediate site boundaries, further agricultural fields are located in each direction. Upper Nantserth Pasture Site of Special Scientific Interest (SSSI) is located approximately 500m north of site and Nant Serth, which is a tributary of the River Wye SSSI, is located approximately 300m north-west of site. The wider landscape is dominated by agricultural fields, woodlands, watercourses and scattered residential dwellings and farms.

10.4 Ecological Features

The starting point is to identify which ecological features or resources are of sufficient value that an impact on them could be considered significant. These features include populations, species, communities, habitats and sites selected as likely to be impacted by environmental changes caused by the proposed development (both positive and negative). Ecological features can have two types of valuation social/community value or biodiversity value, the latter of which this

Chapter is primarily concerned with. Ecological features can be identified as the following:

- Animal or plant species, subspecies or varieties that are rare or uncommon, either internationally, nationally or more locally;
- Ecosystems and their component parts, which provide the habitats required by the above species, populations and/or assemblages;
- Endemic species or locally distinct sub-populations of a species;
- Habitat diversity, connectivity and/or synergistic associations (e.g. networks of hedges and areas of species-poor pasture that might provide important feeding habitat for rare species);
- Notably large populations of animals or concentrations of animals considered uncommon or threatened in a wider context;
- Plant communities (and their associated animals) that are considered to be typical of valued natural/semi-natural vegetation types – including examples of naturally species-poor communities;
- Species on the edge of their range, particularly where their distribution is changing as a result of global trends and climate change;
- Species rich assemblages of plants or animals; and
- Typical faunal assemblage's characteristic of homogeneous habitats.

The value of ecological features can be defined in a geographical context as International; UK; National; Regional; County; District; Local/Parish; Within Zone of Influence Only.

Habitats and species can already have statutory/non- statutory designation and a habitat/species with no designation would need to be values using professional judgment.

10.5 Predicting and Characterising Ecological Impacts

Impacts are assessed in the context of the predicted baseline conditions within the zone of influence of the project during the lifetime of the development. Where possible, a level of confidence for any impact assessed should be specified, either qualitatively or quantitatively with the use of a four-point scale:

- Certain/Near Certain: probability estimated at 95% chance or higher

- Probable: probability estimated above 50% but below 95%
- Unlikely: probability estimated above 5% but less than 50%
- Extremely Unlikely: probability estimated at less than 5%

Where doubt as to which of the categories of probability best fits the level of professional confidence, the more conservative (higher) level is cited.

In order to fully characterise the likely change and impact, reference is made to the following characteristics:

- Positive or Negative;
- Magnitude;
- Extent;
- Duration;
- Reversibility; and
- Timing and Frequency.

10.6 Assessment of Ecologically Significant Effects/Impacts

An ecologically significant impact is defined as an impact (negative or positive) on the integrity of a defined site or ecosystem and/or conservation status of habitats or species within a given geographical area. Positive impacts are likely to be rarer, but are possible if ecological enhancements are included within a scheme's design at an early stage in the project.

A site/ecosystem that achieves this level of coherence is considered to be in 'favourable' condition. When considering if sites or ecosystems will be significantly affected or not the overall questions should be

1) For designated sites – is the project likely to move the condition of the site towards or away from favourable condition?

2) For ecosystems – is the project likely to result in a change in ecosystem function that affect its integrity?

The definition of conservation status for habitats and species used in this assessment is based on the EC Habitat Directive definition. It has been modified so that evaluation of conservation status can be applied to habitats and species within any defined geographical area.

Therefore:

- For habitats, conservation status is determined by the sum of influences acting on the habitat and its typical species, that may affect long-term distribution, structure and functions, as well as the long-term survival of its typical species within a given geographical area;

- For species, conservation status is determined by the sum of influences acting on the species concerned that may affect the long-term distribution and abundance of its populations within a given geographical area.

The significance of the impacts of a development is a product of the characteristics of the impact (direct or indirect etc. see above) and the importance of the receptor (in terms of development control, policy guidance and legislation against the level at which it is valued). When evaluating the significance of impacts on sites and ecosystems at sub-national levels of value, the description of the ecologically important characteristics of the site or ecosystem falls to the ecologists carrying out the assessment.

It is also appropriate to use Biodiversity Action Plan (BAP) guidance, where available, to draw reasonable conservation objectives for those important characteristics. Results from work on levels of ecological value and impact magnitude are both used to assess the significance of ecological impact.

10.7 Level of Significance

A level of significance is deduced by making subjective links between receptor value and the characteristics of the impact whilst giving due consideration to relevant planning policies, conservation status, rarity and legal protection in conjunction with professional experience. The following nominal significance levels have been used in the impact assessment to describe the predicted impact upon the receptor in question, based on known ecological principles and systems:

- Very Major (significant at international level)

- Major (significant at national level)

- Moderate (significant at regional or county level)

- Minor (significant at district/local level)

- Very Minor (significant at local/site level)

- Negligible (not significant)

10.8 Limitations

It is necessary to carry out certain habitat and species surveys during the accepted seasons. The survey work at Llwyngwilym was carried out within these accepted seasons.

10.9 Ecological Surveys

Designated Sites

There are three internationally designated sites within 10 km of the proposed development site and fifteen Sites of Special Scientific Interest (SSSI) within 5 km of site.

River Wye / Afon Gwy (Wales) Special Area of Conservation (SAC) and SSSI is located approximately 1.2 km west of the proposed development site. Together, the River Wye (Lower Wye) and the River Wye (Upper Wye) SSSIs and several of their tributaries represent a large, linear ecosystem which acts as an important wildlife corridor, an essential migration route and a key breeding area for many nationally and internationally important species. The River Wye is of special interest for its associated plant and animal communities.

Elenydd – Mallaen Special Protection Area (SPA), SAC and SSSI is located approximately 1.75 km north-west of the proposed development site. Elenydd-Mallaen is one of the most important areas of hill land for nature conservation and ornithological interest in Wales. It is of outstanding interest for its range of breeding birds of upland and woodland. Much of the hill vegetation is also of special interest.

Coetiroedd Cwm Elan / Elan Valley Woodlands SAC is located approximately 1.9 km west of the proposed development site. The site supports areas of mixed woodland on base-rich soils associated with rocky slopes, dry heath and western acidic Oak woodland.

Upper Nantserth Pasture SSSI is located approximately 500m north of the proposed development site. This site comprises a single sloping field of mainly boggy land on either side of a small tributary of the Nant Serth. The pasture is of special interest because it supports a good range of mire and grassland plant communities within a small area. It has a high species diversity which includes locally and nationally uncommon plants.

Marcheini Uplands, Gilfach Farm & Gamallt SSSI is located approximately 1.7 km north-west of the proposed development site. This site is of outstanding ornithological interest because of the range of breeding bird species occurring on the upland plateau sheepwalks and craggy hill slopes, and in woodlands varying from scattered scrub to well-developed Sessile Oak woodland. The area is of

additional importance because of its representation of blanket mire, heather moorland, western gorse heathlands, lichen-rich rock outcrops and the occurrence of rare species.

Cwm Gwynllyn SSSI is located approximately 1.8 km west of the proposed development site. This site has a number of features of biological and geomorphological interest. Gwynllyn, a small oligotrophic lake, is surrounded by a well-developed open water transition mire grading into soligenous mire. Parts of this mire are floristically rich.

New House Meadow SSSI is located approximately 1.9 km south-west of the proposed development site. This site comprises a single field and adjacent roadside bank lying on gently sloping ground above the flood plain of the River Wye at Rhayader. It is an excellent example of a type of herb-rich grassland that is characteristic of the upland fringe of mid-Wales.

Cae Cwm-Bach SSSI is located approximately 2.3 km west of the proposed development site. The site consists of a single meadow normally grazed by sheep in the spring and then put up for hay and cut in late July or August. It is one of a nationally important series displaying the range of seminatural neutral grasslands occurring in Britain.

Coed Y Cefn SSSI is located approximately 2.4 km south-west of the proposed development site. The site comprises a Sessile Oak (Quercus petraea) woodland comprising rather stunted oak trees, probably of secondary growth, and occasional birch. The wood is notable for the occurrence of extremely high densities of the Wood Ant.

Cae Coed-Gleision SSSI is located approximately 2.8 km north-north-east of the proposed development site. This site comprises a single large field lying on gently sloping ground at an altitude of 285 metres in the valley of the River Marteg. It is traditionally managed hay meadow of a most unusual vegetation type, in which bulky herbaceous plants are more prominent than grasses.

Caeau Wern SSSI is located approximately 2.8 km east of the proposed development site. This is an unusually extensive area of herb-rich, traditionally managed hay meadow.

Upper Wye Tributaries SSSI is located approximately 3.2 km south-west of the proposed development site. The site is of interest for its internationally important populations of Otter and Atlantic Salmon, as well as Bullhead (Cottus gobio).

Cerrig-Gwalch SSSI is located approximately 3.9 km north-west-west of the proposed development site. This is a fine example of a mixed deciduous woodland developed on an east-facing steep cliff comprised of rocks of Silurian age. The tree

layer is scrubby, with Birch (Betula sp.), Oak (Quercus sp.) and Rowan (Sorbus aucuparia) well represented and Ash (Fraxinus excelsior) is locally present. Notable plants include Rock Stonecrop (Sedum forsteranum) and the lichen Peltigera apthosa, a predominantly northern species occurring here at its only known locality in Powys.

Carn Gafallt SSSI is located approximately 3.9 km south-west of the proposed development site. Carn Gafallt is an excellent example of a predominantly upland site supporting a diverse range of habitat types. These include nationally important examples of semi-natural broadleaved woodland, above which is situated one of the largest expanses of heather moorland in Brecknock. The area is not only important for its plant communities, but also supports notable populations of birds, invertebrates and lower plants.

Black Brooks Pastures SSSI is located approximately 4.2 km south-east of the proposed development site. The site is of special interest for its species-rich acid/neutral grassland, mixed grassland and flood-plain fen vegetation, which together extend to over 5 ha and exhibit a wide variety of different vegetation types that together form a natural progression from swamp to dry grassland.

Rhos Rhyd-Y-Ceir SSSI is located approximately 4.8 km south-south-east of the proposed development site. This is one of the finest and most extensive areas of botanically rich damp-wet heathy pasture in Radnor. The site slopes gently to the Rhyd-y-ceir Brook, which forms its north-western boundary. The uncommon Marsh Fritillary butterfly (Eurodryas aurinia) has been recorded in some numbers at this site.

European Protected Species Licence Sites

Information on EPS licences is not currently available in Wales.

Habitat

Phase 1 habitat types recorded within and immediately adjacent to the proposed development sites are listed below.

- Improved grassland
- Hedgerows and trees
- Marshy grassland
- Watercourse

The site or immediately adjacent areas contain habitat suitable for the protected species listed below.

- Badger
- Bats
- Dormouse
- Otter
- Water Vole
- Nesting birds
- Great Crested Newt
- Reptiles

10.10 Ecological Evaluation

Phase One Habitat Survey

Grassland

The proposed development site is located within a short-sward improved grassland field which slopes down to the north. Species comprise a mix of common grasses dominated by Annual Meadowgrass (Poa annua), Perennial Ryegrass (Lolium perenne), Couch Grass (Elymus repens), Cock's-foot (Dactylis glomerata) and Yorkshire Fog (Holcus lanatus), whilst herb species include White Clover (Trifolium repens), Creeping Buttercup (Ranunculus repens), Common Daisy (Bellis perennis), Broad-leaved Dock (Rumex obtusifolius) and Common Chickweed (Stellaria media). A second field containing improved grassland is located to the south of site where the approved hardstanding access track will be constructed. Species within this field comprise a similar mix to the proposed development site with the addition of Common Bent (Agrostis capillaris), Harebell (Campanula rotundifolia), Common Knapweed (Centaurea nigra), Fat Hen (Chenopodiumalbum), Shepherd's Purse (Capsella bursa-pastoris) and Pineappleweed (Matricaria discoidea) along the eastern edge of the field.

Hedgerow and trees

Dense and mature hedgerows form the southern and eastern boundaries of Field 1. Species within these hedgerows include Hawthorn (Crataegus monogyna), Blackthorn (Prunus spinosa), Hazel (Corylus avellana), Rowan (Sorbus aucuparia), Elder (Sambucus nigra), Bramble (Rubus fruticosus agg.) and Dog Rose (Rosa canina

agg.). Ground flora species include Common Nettle (Urtica dioica), False Oatgrass (Arrhenatherum elatius), Common Dandelion (Taraxacum officinale agg.), Timothy (Phleum pratense), Cleavers (Galium aparine), Common Hemp-nettle (Galeopsis tetrahit), Harebell, Foxglove (Digitalis purpurea), Wood Avens (Geum urbanum) and Violet (Viola sp.).

The western boundary is formed by a combination of sections of mature hedgerow dominated by Hazel, scattered mature and semi-mature trees, post and wire fenceline and an access gateway. Tree species along the boundary include Silver Birch (Betula pendula), Damson (Prunus insititia), Ash, Blackthorn and Hazel. An individual mature Ash is located at the southern end of the western boundary. A mature and leggy hedgerow is located along the eastern boundary of Field 2. Species within the hedgerow include a similar mix to the boundary hedgerows within Field 1.

Marshy grassland

At the north-western corner of Field 1 there is a low-lying area of marshy grassland and scattered trees. Ground flora is dominated by grasses, frequent Meadowsweet (Filipendula ulmaria) and Soft Rush (Juncus effusus) and tree species include Silver Birch and Hazel.

Watercourse

A field drain is located adjacent to the northern field boundary of Field 1 and approximately 135m north of the proposed development footprint. The field drain adjoins Nant Serth approximately 330m north-west of the proposed development field boundary. The drain was dry at the time of survey with shallow banks vegetated with grasses and Soft Rush.

Protected Fauna

Badger

An active Badger sett was recorded along the eastern field boundary of Field 1 approximately 90m north-east of the proposed development footprint. Fresh Badger latrines were also noted along the eastern field boundary in close proximity to the sett and Badger tracks were noted crossing the field to the east and west.

The remaining hedgerow bases around the boundaries of site and grassland also provide suitable habitat for foraging and sett creation.

Bats

There is no suitable roosting habitat within the proposed development site and no features suitable for roosting bats (frost cracks, knot holes etc) were noted on the mature Ash tree from ground level inspection.

The boundary hedgerows and trees around Fields 1 and 2 and field drain along the northern boundary of Field 1 provide suitable foraging and commuting habitat for bats however the short sward improved grassland within the development footprint is unlikely to be of importance for bats.

Dormouse

There are no records of Dormouse within 2km of the proposed development site.

The boundary hedgerows provide some suitable foodplants and cover for Dormouse although there are frequent gaps created by access gateways and sections of fenceline around the field boundaries. The site is also poorly connected to any extensive Dormouse suitable habitat.

Otter

There are records of Otter associated with the River Wye located approximately 1.2 km south-west of site. No evidence of Otter was recorded on or adjacent to site and the improved grassland within the proposed development footprint is unsuitable for Otter.

The field drain along the northern field boundary of Field 1, located approximately 135m north of the proposed development footprint, was dry at the time of survey and likely to only hold shallow water during times of heavy rain fall and over winter. No holts were recorded along the section of field drain adjacent to site and whilst the area of marshy grassland at the north-western corner of the field could provide temporary cover for resting Otter there are very limited features where holts could be located.

Water Vole

There are no apparent records of Water Vole within 2km of the proposed development site.

No evidence of Water Vole was recorded on or adjacent to the proposed development site and the improved grassland within the proposed development footprint is unsuitable for Water Vole.

The section of field drain adjacent to the northern field boundary is of limited suitability for Water Vole and whilst there are some suitable foodplants within and adjacent to the watercourse and within the marshy grassland, the shallow vegetated

banks are of limited opportunity for burrowing. In addition, as shown by the lack of water present in the drain at the time of survey, water levels within the drain are likely to fluctuate rapidly throughout the year and this is likely to deter the presence of Water Vole.

Birds

The hedgerows and trees around the boundaries of site provide suitable habitat for breeding birds. Red Kite, a Red List species, were noted on and adjacent to site throughout the survey and the mature Ash tree along the western site boundary provides suitable habitat for nesting Red Kite.

Ground nesting species such as Skylark (Alauda arvensis), a UKBAP and Red List species, are unlikely to occur within the proposed development footprint due to the close proximity to hedgerows and trees and short sward of the improved grassland.

There is no suitable habitat for nesting Barn Owl on or adjacent to the proposed site. The grassland around the edges of site provide suitable habitat for hunting Barn Owl and there is a historic record of Barn Owl approximately 1.4 km south of site (BTO 2017; NBN).

Great Crested Newt

There are no apparent records of Great Crested Newt within 2 km of the proposed development site and no ponds within 500m of site.

Suitable Great Crested Newt terrestrial habitat on and adjacent to site is limited to the hedgerow bases and marshy grassland at the north-western corner of the field which provide suitable habitat for foraging, commuting and hibernating Great Crested Newt. The short sward improved grassland is not suitable for Great Crested Newt due to the lack of cover but could be crossed during dispersal.

Reptiles

There are no apparent records of common reptile species within 2 km of the proposed development site.

Suitable habitat for reptiles is limited to the hedgerow bases, marshy grassland at the north-western corner of the field and field drain along the northern field boundary which could be used by foraging, dispersing and hibernating reptiles.

The improved grassland is only of limited suitability for dispersing reptiles and unsuitable for hibernating and foraging due to the lack of cover.

10.11 Habitat Evaluation

Works will directly affect ecologically poor improved grassland of low ecological value.

Planning permission has recently been approved for the construction of a single poultry unit within the affected field and hardstanding access track within a further field to the south-east (Planning Reference 18/0463/FUL) although these had not been constructed at the time of survey. This approved works will affect improved grassland and hedgerow.

Designated Sites

There are three internationally designated sites within 10 km of the proposed development site and fifteen Sites of Special Scientific Interest within 5 km of site. Impacts on these designated sites are not predicted within the ammonia report (Reference: 01.0190.001 v1 Isopleth, July 2020) however consideration should be given to the potential impacts of drainage and surface water run-off on the field drain located approximately 135m north of site and further downstream where it adjoins Nant Serth and subsequently the River Wye SAC and SSSI approximately 1.2 km west of site. Appropriate mitigation measures will be put in place to ensure there are no significant negative impacts on the field drain, Nant Serth and the River Wye and the species that they support.

10.12 Recommendations, Mitigation and Enhancement

Measures are to be put in place to ensure there are no significant negative impacts on the field drain to the north of site, which flows towards Nant Serth and subsequently the River Wye SAC and SSSI, and the species it supports.

The proposed drainage and dirty water treatment methods during and post construction will ensure that there are no impacts on broadleaved woodland and habitats down the slope from site.

The proposed drainage and dirty water treatment methods will ensure that there are no impacts on the hydrology and ecology of the field drain and that no dirty water will enter the watercourse and subsequently discharge into the River Wye SAC and SSSI.

Tree Planting

No specific tree planting measures are recommended in the ammonia report to mitigate from ammonia emissions. This is due to the distance between the proposed site and the designated sites, the status and ammonia sensitivity of the designated sites and that impacts at all sites will be below 1% of the relevant critical load and nutrient nitrogen critical load. Mitigation for ammonia is provided by the use of a scrubber system. Additional tree planting is recommended in the Ecology

Report. Planting schemes can be dealt with by condition if permission is granted. Tree planting could be undertaken along the north-western and north-eastern edges of the proposed poultry shed to comprise of a woodland belt.

Habitats

The Ecological Appraisal highlights that the construction area for the poultry shed will affect improved grassland. The approved construction of the poultry shed and associated hardstanding access track to the south of site will also affect improved grassland and a section of hedgerow within Field 2.

The construction works will affect ecologically poor improved grassland and the loss of this area is unlikely to have a significant negative impact and specific mitigation measures for this loss are not considered necessary.

The approved development of the hardstanding track will also affect a section of mature hedgerow of higher ecological value and specific mitigation measures are recommended to compensate for this loss. The existing western boundary hedgerow within will be planted up to create dense, continuous field boundary hedgerow with the exceptions of the access gateway. Hedgerow planting should comprise native broadleaved species including a mix of Hawthorn, Blackthorn, Holly (Ilex aquifolium), Hazel, European Spindle (Euonymus europaeus), Dog Rose, Honeysuckle (Lonicera periclymenum), Elder, Field Maple (Acer campestre) and Dogwood (Cornus sanguinea). The base of the planted-up hedgerow will be seeded during the autumn with a hedgerow wildflower seed mix. Appropriate seed mixes of local provenance can be sourced from www.naturescape.co.uk and their N9F seed mix would be suitable. Tree planting is also recommended along the north-eastern and north-western boundaries of the development footprint.

Hedgerows should be double planted with six plants per metre; mulchings or weed suppressing mats should be used to aid good establishment of woody species. Plants should be 80 – 100 cm bare root whips (1 + 1), planted between November and March and staked and protected with a bio-degradable treeguard to prevent pest damage.

All new hedgerow and tree planting will be monitored for a minimum of 5 years to check establishment and if die-back or failure to establish occurs then re-planting will be required. Re-planting will replace the original species and be of a similar size. Once established (probably when first laid) the tree guards should be removed. The preferred after-care for all new hedges is for them to be laid when they are between 7 and 10 years old, depending on the rate of establishment. The planted-up field boundary hedgerow and additional tree planting, as recommended, will compensate for the loss of the section of hedgerow in Field 2.

All new hedgerow and tree planting will be monitored for a minimum of 5 years to check establishment and if die-back or failure to establish occurs then replanting will be required. Replanting will replace the original species and be of a similar size. Once established (probably when first laid) the tree guards will be removed. The preferred after car for all new hedges is for them to be laid when they are between 7 and 10 years old, depending on the rate of establishment.

Protected Fauna

Badger

An active Badger sett was recorded along the eastern field boundary and approximately 90m north-east of the proposed development footprint. Badger latrines were also noted along the eastern field boundary in close proximity to the sett and Badger tracks were noted extending across the field to the east and west. The hedgerow bases and improved grassland within both Field 1 and 2 provide suitable habitat for sett creation and foraging.

A buffer measuring a minimum of 2.5m will be retained between the southern, eastern and western hedgerows and the footprint of works which will allow the continued free movement of foraging and commuting Badger around the edges of the site.

It is unlikely that new setts will be dug on site prior to works however due to the presence of an active sett along the eastern field boundary and evidence of foraging and commuting Badger around the field boundaries it is appropriate that safe working measures are put in place for the duration of works. Safe working measures will include a pre-works check by a suitably experienced ecologist to check for any newly excavated setts. In addition, to ensure foraging Badgers do not become trapped within any excavations these should either not be left uncovered overnight or ways of escape for Badgers provided (wooden planks or graded earth banks).

Bats

There are no features suitable for roosting bats that will be affected by the proposals but the hedgerows and trees within and around site are suitable for foraging and/or commuting bats.

Long term bat roosting provision should be incorporated into the proposals and should include a minimum of three bat boxes (such as Schwegler 2F, or equivalent) erected on the western boundary trees. In addition, bats should be taken into consideration during lighting design, with lighting directed away from boundary hedgerows and trees and any new roosting provision.

Predicted impacts on commuting and foraging routes as a result of the removal of a section of hedgerow within Field 2 are anticipated to be negligible and mitigation and enhancement for bats include the planting up of the western boundary hedgerow within Field 1 and tree planting to improve the quality of foraging habitats as well as connectivity with the wider landscape.

Dormouse

Due to the lack of records in the area, limited connectivity to extensive suitable habitat and suitability of the habitats affected by the works, it is considered that the presence of Dormouse on site is unlikely and there will be no negative impact on this species.

Otter

The presence of Otter along the field drain is therefore considered unlikely.

Appropriate pollution control and drainage methods will ensure there are no significant negative impacts on the hydrology and ecology of the field drain and subsequently on Nant Serth and the River Wye SAC and SSSI downstream and these watercourses will remain suitable for use by Otters. All excavations and main groundworks associated with the construction of the poultry units and access will be completed at least 100m from the banks of the field drain with a buffer between site and the field drain marked out by Heras type fencing to prevent construction vehicles and regular human disturbance within close proximity to the field drain.

All lighting during and post works will not be directed at the field drain to ensure it remains unlit.

Water Vole

The proposed development works will take place within habitats that are unsuitable for Water Vole and as long as appropriate pollution control and drainage methods are adhered to there will be no significant negative impacts on the drain and adjacent bankside habitats or watercourses downstream. No significant negative impacts on this species are anticipated.

Nesting Birds

The boundary hedgerows and trees around the field boundaries are suitable habitats for nesting birds. Given the habitat types present on site it is considered that the potential for any Schedule 1 breeding birds to be present within the proposed development footprint is limited to Red Kite which could utilise the mature Ash tree along the western field boundary however this will not be directly affected by the proposals. The field boundaries are also suitable for hunting Barn Owl.

The approved construction of the hardstanding access track to the south of site will affect a section of hedgerow which provides suitable nesting habitat. Works affecting suitable nesting habitat will be completed outside the bird nesting season (March to August inclusive) or, if this is not possible, after a survey by an experienced ecologist. Hedgerow netting is not to be used.

The planting up of the western boundary hedgerow and planting of trees, will only have a positive impact on nesting birds at the site. A combination of one open-fronted nest box, one single hole-fronted nest box and one Barn Owl box will be erected on the retained trees along the western field boundary.

Great Crested Newt

Taking in to consideration the distance between the construction areas and nearest record of Great Crested Newt, the absence of suitable breeding ponds within 500m of site and the area of habitats affected by the proposals, it is considered very unlikely that the proposed development will affect this species.

Reptiles

Mitigation measures should be adhered to avoid killing or injuring reptiles. These methods should include habitat modification (e.g. cutting and maintaining the vegetation to just above ground level prior to works) to discourage reptiles from occurring within the footprint of works. The hedgerow clearance within Field 2 should be undertaken when reptiles are active (March to October inclusive) and under watching brief by a suitably experienced ecologist.

During construction, materials should be stored on pallets to prevent reptiles, if accessing the site, from being crushed when they are moved and excavated earth on the site should be kept to a minimum and away from the boundaries to deter reptiles from using it for temporary cover. Any planting work will enhance the site for reptiles.

10.13 Overall Conclusions

It is considered that there will be no impacts of major or intermediate significance on habitats or protected species. There will be no significant loss of habitat as a result of the development during the construction, operational or decommissioning phase, although the intensive grassland and hedgerow may see some minor impact. The planting of hedges and trees as part of landscaping works will provide an intermediate positive effect.

Any potential negative impacts can be minimised through the proposed mitigation measures.

11. Noise and Vibration

11.1 Introduction and Policy

This chapter looks at noise created by the proposed development, and the potential impacts of any noise created on surrounding receptors, such as, residential properties and amenity users of the local area as well as the measures which will be put in place to mitigate any potential impacts.

Fixed plant and poultry unit noise assessment should be carried out in accordance with the guidance contained in British Standard 4142 Method for rating industrial noise affecting mixed residential and industrial areas.

A Noise Impact Assessment (NIA) in accordance with all relevant guidance has been carried out by ION Acoustics and submitted at ***Appendix 7*** of this ES. The results of the Noise Assessment have been considered in this chapter.

The noise assessment of the two broiler units has been carried out in accordance with the guidance contained in British Standard 4142:2014 *Methods for rating industrial and commercial sound.*

Whilst reasonable effort has been made to ensure that the noise report is easy to understand, it is technical in nature.

11.2 Site and Development

Existing Site

The site is located on a hillside, running downhill towards the main road. Access to the site is to be gained by a new road linking the site with the main road (B4518) at the existing field access. The access road will run through the adjacent field, following the field boundary. The site already has planning consent for a single poultry shed, granted under application reference 18/0463/FUL in June 2020. The extant consent permits construction of a single shed to accommodate 55,000 birds per crop.

The receptor locations together with the monitoring locations can be seen below:

Figure 12.1: Location of noise receptors and monitoring

Distance from Site:

- AL01 Coed yr Ardd 230m
- AL02 Rhayader Nursery 315m
- AL03 Beili Gof (relation) 190m
- AL04 Bryn Pedol 230m

Proposed Development

This application is to seek consent for an additional shed at the poultry farm to double the overall capacity of the site to 110,000 birds per crop. The additional shed is to be built alongside the consented shed and will operate the same ventilation strategy; utilising gable end, air scrubbing fans and ridge mounted fans for additional ventilation.

The new poultry shed will include the following plant:
• 1 no. Gable end ammonia scrubbing fan unit;
• 14 no. Ridge mounted extraction / ventilation fans; and,
• Feed bins located between the sheds.

11.3 Methodology and Guidance

Technical Advice Note (Wales) 11 - October 1997

Annex B of the document details the assessment of noise from a number of different sources including: road traffic; railway and aircraft. It does not provide specific information on agricultural activities though does reference noise from commercial and industrial developments which are considered to be suitable in this instance. In paragraph B17 the guidance references British Standard 4142:1990. The 1990 iteration of the standard has been replaced by a number of more recent versions, with the most recent being BS4142:2014 +A1:2019.

This latest version has been used to assess noise from the development together with absolute standards given in British Standard BS 8233: 2014 and World Health Organisation (WHO) guidance.

BS4142:2014

British Standard 4142:2014 *Methods for rating and assessing industrial and commercial sound* is intended to be used to assess the potential adverse impact of sound, at nearby sensitive receptor locations.

Where the specific sound contains tonality, impulsivity and/ or other sound characteristics penalties should be applied depending on the perceptibility. Further details in relation to this are outlined at section 3.2 of the Noise Report.

The sound contains identifiable operational and non-operational periods that are readily distinguishable against the existing sound environment, a further penalty of 3dB may be applied,

The assessment of impacts outlined in BS4142:2014 is undertaken by comparing the sound rating level, i.e. the specific sound level of the source plus any penalties, to the measured representative background sound level immediately outside the sensitive receptor location. Consideration is then given to the context of the existing sound environment at the sensitive receptor location to assess the potential impact.

Once an initial estimate of the impact is determined, by subtracting the measured background sound level from the rating sound level, BS4142:2014 states that the following should be considered:

• Typically, the greater the difference, the greater the magnitude of the impact;

• A difference of around +10dB or more is likely to be an indication of a significant adverse impact, depending on the context;

• A difference of around +5dB is likely to be an indication of an adverse impact, depending on the context; and

• The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. It is an indication that the specific sound source has a low impact when the rating level does not exceed the background sound level, depending on the context.

BS4142:2014 notes that: "Adverse impacts include, but are not limited to, annoyance and sleep disturbance. Not all adverse impacts will lead to complaints and not every complaint is proof of an adverse impact."

BS4142:2014 outlines guidance for the consideration of the context of the potential impact including consideration of the existing residual sound levels, location and/or absolute sound levels.

BS 8233: 2014 and WHO criteria

British Standard BS 8233: 20141 and the World Health Organisation (WHO) also provide external noise criteria to protect residential amenity.

Table 12.1 WHO Criteria

Location	Critical Health Effect	07:00 to 23:00	23:00 to 07:00
Outside Bedroom Windows	Sleep Disturbance (Windows Open)	--	42dB $L_{Aeq,\ 8hours}$ (1)
Amenity Spaces (Gardens / Patios)	Moderate Annoyance Serious Annoyance	50dB $L_{Aeq,\ 16\ hours}$ (2) 55dB $L_{Aeq,\ 16\ hours}$ (2)	--
Notes: From WHO Community Noise Guidelines (1999) reduced by 3dB so it is stated as a free-field value BS 8233: 2014 and WHO Community Noise Guidelines			

Linked Property

The property identified as AL03 (Beli Gof) on Figure 1 above is known to be in the ownership of a relative of the land owner. As such, it is considered to be linked to the proposed development. In this instance, the response to noise from the facility would not conform to the impact criteria detailed in BS4142:2014. Given this, the noise impact at the landowner property has been assessed in line with the noise

limits determined to protect sleep and amenity in line with the guidance from the World Health Organisation (WHO) and BS 8233: 2014.

Absolute Noise Level

In instances of low background and rating noise levels, BS4142 indicates that assessment in line with absolute noise limits might be as, or more, appropriate than a relative assessment.

In these instances, to ensure the proposed development is not a significant or prohibiting factor in achieving the relevant WHO guideline values at sensitive receptors, noise generated by the development should aim to be approximately 10dB below the guidance levels. In achieving this criterion, the facility is considered to be consistent with a rating of a low impact in accordance with BS 4142.

11.4 Baseline Noise Survey

A baseline noise survey was carried out from 8th to 10th September 2020. This was undertaken by means of unattended logging of background and ambient noise levels at one location representative of the receptor location, Coed yr Ardd (AL01). Details of the equipment used and the exact locations can be seen in the NIA at ***Appendix 7.*** The noise climate at this location was governed by distant road traffic noise which included sporadic movements on the B4518 and the surrounding A roads (A470 and A44). Some noise from livestock (horses) was evident in the adjacent field however this was low level noise and stopped once the site engineer vacated the area (as is evident in the audio recordings).

Occasional bird song was noted however, no other significant noise sources were noted during the attended portions of the survey. The monitoring location was underneath power lines which follow the field boundary between Llwyngwilym farm and the adjacent property. No noise from the power lines was evident during either the attended period of the survey or in the audio recordings made.

<u>Noise Level Results</u>

Full results and analysis of the measured sound levels can be seen in the NIA at *Appendix 7*.

The noise data is presented in full in the NIA over the typical daytime (07:00 to 23:00) and night-time (23:00 to 07:00) periods for each day.

The data indicates that the prevailing ambient noise climate falls within the range LAeq 32dB and 40dB. Noise levels are higher during periods of rainfall however these have been omitted from the table above. The mean and mode of the background sound level ranges between LA90 23dB and 33dB and would be considered low in

both instances. Generally speaking, the prevailing noise climate would be considered typical of a relatively tranquil, rural setting, with sporadic vehicle noise evident from the surrounding road network.

During the daytime period analysis indicates that the background sound level at the monitoring location is low, with a mean and mode value of LA90 at 30dB. During the night-time distribution of LA90, 15min night-time values falls entirely within the range LA90 21dB and 32dB with a mode of LA90 26dB.

The noise climate in the vicinity of the site is considered to be low during both the daytime and night-time periods. As such, the absolute noise limit has been adopted for all third-party receptor locations; that is 32dB(A). For the linked property, related to the land owner (AL03), a more relaxed noise target of 42dB(A) is proposed based on the WHO sleep protection guidelines (converted to a free field value).

11.5 Noise Modelling Assessment and Predictions

Full details can be seen in the NIA at ***Appendix 7***.

Noise sources:

Ventilation fans

Plant	Description	Number	Noise Data
Fancom Type3680	Ridge Fans	14 per shed	L_{pA} 70dB @2m per fan
IPT Ventmax 1200 Air Scrubbers	Gable End Fans	1 per shed	L_{pA} 65dB @3m per fan

Table 12.2 Ventilation fans

The ventilation requirements of the birds within the sheds vary depending on the age of the brood, internal environmental factors (temperature, air quality, relative humidity etc) and external environmental factors (external ambient air temperature etc). Ventilation requirements increase as the birds get larger. Generally speaking, the ventilation characteristics fall in to two categories as follows:

Minimum Transitional Tunnel Ventilation (MTT) – Minimum ventilation is required whenever a brood is within the house to ensure adequate internal environmental conditions prevail throughout the growing period. Minimum ventilation exhausts any stale air from the sheds via the air scrubbers, removing moisture and harmful gases while maintaining an appropriate internal air temperature. The minimum level of ventilation varies though out the life cycle of the birds with older, larger birds requiring greater ventilation. As such, as the brood grows, more demand is put on the fans to provide adequate ventilation. The ventilation requirements during the night-time period are lower than the daytime periods due to the reduced activity of the birds and the generally lower external ambient air temperatures etc. To that

end, a lower level of demand is put on the ventilation systems during the night-time.

Full ventilation – The full ventilation scenario approximates a scenario where both ridge fans and air scrubbers are running, providing ventilation during periods of higher external air temperatures when birds are older and more able to withstand chill factors. Given the lower external ambient air temperatures during the night-time period and the reduced activity levels of the livestock, it is considered highly unlikely that full ventilation would be required during the overnight period.

Assessment Scenarios

The ventilation requirements, and by extension operational demand on the fans, vary as a function of the age of the birds. The older and larger the birds the greater the ventilation requirements and the more demand is placed on the fans. Full methodology can be seen set out in the NIA.

The following assessment scenarios have been assessed:

Assessment Scenario	Operational Phase		Description	Assessment Period
Scenario A	Minimum Ventilation	Week 1 Ventilation	Ventilation requirements up to the end of day 7 of flock cycle. 20% on time for air scrubbers. Ridge fans off.	Daytime hours
		Week 3 Ventilation	Ventilation requirements up to the end of day 21 of flock cycle. 23 % on time for air scrubbers. Ridge fans off.	
		Week 6 Ventilation	Ventilation requirements up to end of day 42 of the flock cycle. 37% on time for air scrubbers. Ridge fans off.	
	Minimum Ventilation	Night Ventilation	Minimum ventilation during the night-time period. 23% on time for air scrubbers. Ridge fans off.	Night-time
Scenario B	Full Ventilation	Ridge Fans and Air Scrubbers	Maximum ventilation requirements assuming 100% ventilation requirements are provided by both the air scrubbers and ridge fans. 50% on time for air scrubbers; 50% on time for ridge fans	Daytime only
Scenario C	HGV Movements	De-population	Final clearance of the poultry sheds. No fans	Night-time only

Table 11.3 Assessment scenarios

11.6 Operational Assessment

The full results can be seen in the NIA at ***Appendix 7*** with the findings set out below. It should be noted that the receptors identified as AL03 are linked to operations at the farm and as such have been assessed against different criterion.

Scenario A Minimum ventilation:

The assessments presented in the NIA, representing typical activities at the proposed poultry shed, indicate that noise levels would be very low when predicted to the nearest receptor locations, rarely exceeding a specific noise level of Ls 20dB. The rating noise levels would fall between 9dB and 21dB below the noise targets derived in the NIA. This is considered to indicate a low noise impact at all of the receptors considered in accordance with BS 4142:2014.

Scenario B Full ventilation:

Full ventilation is only required during the daytime hours towards the end of the crop cycle when the birds are of sufficient size to withstand any chill generated by the increased air flow. Full ventilation utilises both the gable end air scrubbers and the ridge mounted fans. In the assessment below, the fans are considered to be operating at 50% of their maximum capacity which is more than adequate to provide excessive ventilation and cooling through the shed.

The predicted levels indicate that noise generated by the proposed facility would not exceed the proposed noise targets with differences between 0 and -8 dB below the noise targets. This would indicate a low impact in accordance with BS4142:2014.

11.7 Cumulative Consideration

There is the potential for cumulative noise impacts to arise from the operation of the two sheds at the site which, it is assumed, would operate in parallel with each other.

No noise assessment was undertaken in the original planning application however, the consented shed is understood to utilise the same ventilation strategy as the new shed i.e. gable end air scrubbers augmented with ridge fans when necessary. To that end, it is possible to consider the noise impact associated with the operation of the two sheds to quantify the potential cumulative noise impact.

The assessment summarised below considers both the typical ventilation at week 6; and the full ventilation scenario when both the ridge fans and gable end fans are operating to provide ventilation and cooling.

The assessment fully detailed in the NIA indicates that, during typical operation at the site, with both sheds operating, the predicted noise level from the ventilation fans would fall significantly below the proposed noise targets. This is considered to indicate a low noise impact at all of the receptors considered in accordance with BS 4142:2014. During the full ventilation scenario (during the hottest daytime periods), noise levels would exceed the proposed targets by between 1dB and 3dB at the third-party receptor locations. BS4142 would consider this 'the less likely it is that the specific sound source will have an adverse or significant adverse impact'.

It is noted that the noise levels, in absolute terms are low and would be masked by typical daytime activities in the area i.e. road traffic movements, farming activities etc. In addition, noise from ventilation fans are considered to be generally broadband in nature with no particularly identifiable characteristics. As such, while noise from the facility may occasionally be audible, it is not likely to be particularly intrusive and would not result in any loss of amenity for the nearest receptor locations.

11.8 Vehicle Movements

The poultry sheds are accessed from the main road, via the existing field access and along a new, purpose-built access road to the site. The access road is positioned approximately 180m from the nearest third-party receptor (AL01) and will join the main road approximately 125m to the south west of Beili Gof (AL03).

General vehicle movements to and from the development, including feed and bedding deliveries etc, would only occur during the daytime period, between the hours of 07:00 to 20:00. The exception to this would occur during the thinning and de-population process which happens at night, from 02:00, at the end of each flock cycle. The number of vehicle movements is based on the Transport Note at **Appendix 4.**

The Transport Note indicates that over a single crop cycle, 69, two-way vehicle movements occur during the daytime period. This would average to one or two vehicle deliveries per day between the hours detailed above.

The thinning and depopulation activities occur during the night-time period. Of the remaining vehicle movements, the information indicates that over a single crop cycle, 39, two-way vehicle movements occur during the daytime period. This would average to around one vehicle delivery per day between the hours detailed above.

The thinning and depopulation processes start during the night-time hours: commencing from 02:00 and continuing until the task is completed. Typically, this may run in to portions of the daytime period i.e. beyond 07:00. During the

depopulation scenario, the site would expect one vehicle to arrive at the site, be loaded and leave within an hour.

Daytime Movements

The assessment in the NIA indicates that, when averaged over a one-hour assessment period, noise from vehicle movements on the access road would fall significantly below the noise limits. This would indicate that noise associated with vehicle movements would be of low impact during the daytime period.

Night-time Movements

The assessment in the NIA indicates that, during a 15-minute, night-time assessment period, noise from HGV movements would fall below the noise limit at both receptor locations.

11.9 Summary from the NIA

The NIA found that uncertainty is not considered to have a significant impact on the assessment outcomes.

The assessments have been informed by a baseline and ambient noise survey undertaken between the 8th and 10th September 2020. The noise survey indicates that the existing noise climate in the area is very low therefore noise targets have been derived from guidance detailed in BS8233 and the World Health Organisation Guidelines for Community Noise. These noise targets have been used to assess the noise impact arising from activities at the site in line with BS 4142: 2014.

The assessment indicates that, under the various operational scenarios considered within this report, noise generated by the proposed extension would fall below the noise targets. This is considered to demonstrate a low noise impact in accordance with BS4142.

Further assessment of the cumulative scenario, including the proposed and consented sheds, indicates that, under typical operation, noise from the two sheds would, again, fall well below the noise targets. During the full ventilation scenario noise levels do exceed the daytime targets however the impact is considered to be less than adverse and, under normal conditions is likely to be masked by the prevailing daytime ambient noise climate.

Additional consideration of the noise associated with vehicle movements indicates that, generally noise from HGVs would fall below the proposed noise targets during both the daytime and night-time periods. This is considered to be an indication of a low noise impact in accordance with BS4142.

Based on the above, it is considered that there are no noise-related issues associated with the proposed extension to the consented poultry farm at Llwyngwilym farm which would prevent the proposals being granted planning permission.

11.10 Residual Impacts and Conclusions

Overall conclusions in the NIA are that there are no significant issues relating to noise associated with the proposed facility that would be sufficient to deny the approval of planning permission on the grounds of noise. It is an agricultural operation in an agricultural setting.

Ventilation is controlled and takes place at a variable rate. The fans will very rarely, if at all operate to full capacity and minimum ventilation requirements will apply. A further source of noise is HGV traffic, however this is already one of the existing noise sources and has been assessed as being low impact.

The facility will operate under an Environmental Permit issued by NRW. This will require a Noise Management Plan to be prepared to include noise mitigation. This will also include a Noise Complaints Form to enable complaints to be logged and appropriately investigated.

There will be no significant impact as a result of noise generated by the proposed development.

12. Odour

12.1 Potential Odour Impacts from Poultry Buildings

Isopleth Ltd has prepared a detailed assessment of the odour impacts associated with the proposed poultry units. The Odour Impact Assessment can be seen at *Appendix 8*.

12.2 Environmental Permitting

The Planning and Environmental Permitting processes are separate but complementary. At the time the Odour Report was produced (July 2020), an application for an Environmental Permit to cover the broiler units had yet to be made been made to Natural Resources Wales (NRW). An Odour Management Plan aimed at ensuring that the operation will be acceptable in relation to odour will be prepared in support of the application. There is an existing OMP for the approved building which will be updated to take account of the increase in bird numbers.

Paragraph 5.13.3 of Planning Policy Wales requires that the Local Planning Authority must assume that the Permit will operate effectively in preventing unacceptable levels of odour at relevant receptor locations.

12.3 Scope and Limitations

The scope of the supporting Odour Impact Assessment (OIA) is limited to the prediction, through atmospheric dispersion modelling, of impacts at local sensitive receptors based on design information and desktop emission rates.

Assessment of impacts associated with emissions of ammonia on sensitive ecological sites is outside the scope of the odour report, which deals with issues of odour only.

12.4 Aims and Objectives

The objectives of the assessment are as follows:

- Estimate odour emissions from the proposed facility with additional sheds
- Quantify impacts on sensitive receptors based upon emissions values
- Assess the significance of these impacts

12.5 General Approach

The approach taken by Isopleth Ltd when carrying out the odour assessment is consistent with that for other broiler applications in Powys, where the same approach has been regarded as acceptable. For example:

1. Application Ref. 19/0710/FUL. Erection of three new broiler accommodation buildings, conversion of existing free range building into a broiler accommodation building, renewables shed, feed bins, and associated yard area and infrastructure. Glanmiheli Farm Chicken Units Kerry Newtown Powys SY16 4LN

2. Application Ref. 19/0508/FUL. Erection of 2 No. agricultural buildings for poultry rearing, together with associated infrastructure including a package treatment plant. Penpound Newbridge-on-wye Llandrindod Wells Powys LD1 6HP

In the above cases Powys Council has referred to the requirement for an NRW Environmental Permit and therefore has complied with Paragraph 5.13.3 of Planning Policy Wales.

The approach taken in this report is also consistent with other recent schemes such as the first broiler unit at Llwyngwilym Farm (application ref: 18/0463/FUL). The initial building also proposed the use of IPT VentMax 1200 Acid Scrubbers (or equivalent). The selection of a scrubber will be a commercial decision taken at the tendering stage prior to construction of the units. There are several suppliers of scrubbing technology for poultry buildings including IPT, DraperVENT, JF McKenna and Big Dutchman. This report assumes that, in the event that an alternative scrubbing system is chosen for the final design, the performance would be equivalent to (or better than) that of the IPT VentMax system in relation to odour scrubbing performance.

12.6 Assessment of Odour Exposure

In the UK odour assessments for poultry units are most commonly undertaken using the concept of the European Odour Unit, as defined in BS EN 13725. This approach allows impact assessment of any odorous gas as it is independent of chemical constituents and centres instead on multiples of the detection threshold of the gas in question.

As the odour unit is a Standard Unit in the same way as a gram or milligram, the notation used in odour assessment follows the conventions of any mass emission unit as follows:

- Concentration
- Emission
- Specific emission (emission per unit)

Like air quality standards for individual pollutants, exposure to odour is given in terms of a percentile of averages over the course of a year. The exposure criteria most accepted in the UK at present is given in terms of (concentration) European Odour Units as 98th percentile of hourly averages. This allows 2% of the year when the impact may be above the limit criterion (175 hours).

Odour perception, annoyance and nuisance is related to more than simply odour impact. The five 'FIDOL' factors must be considered when assessing the acceptability of a scheme.

12.7 Identification of Odour Sources

Potential sources of odorous emissions have been identified on the basis of a review of the proposed development design. This involves identifying sources of potential releases to atmosphere. The identified potential odour sources are as follows:

- Point sources
- Waste product handling and spillages etc.

Control of fugitive/intermittent releases of odour will be addressed by a site Odour Management Plan as part of the Permitting process.

12.8 Derivation of Emissions

Odour emissions for the proposal have been estimated using values in published literature for similar facilities. Ventilation flows are based on the standard best practice design for UK broiler houses.

Odour emission rates should be considered worst case as they have been measured at facilities which do not apply the same odour prevention measures as will be adopted at Llwyngwilym Farm. In reality emission rates would be expected to be significantly lower.

12.9 Quantification of Odour Impact

Data from the previous stages is input to an atmospheric dispersion model. The AERMOD model has been applied with due consideration to relevant guidance. This model is accepted by the NRW and UK planning authorities and its predictions have been validated against real time monitoring data by USEPA.

Dispersion modelling guidance indicates that at least 3 (ideally 5) years of meteorological data should be applied to ensure that infrequent weather conditions do not unduly bias the results. The results in a range of predicted impacts for different years of meteorological data and the average value is used to assess compliance with a range of impacts used to assess likely variation between years and the risk of shorter term impacts. This is particularly important in relation to odour, where acceptability of impacts is assessed by receptor over long time periods rather than as a result of infrequent or unusual meteorological conditions.

12.10 Assessment Scenarios

Two scenarios have been modelled to represent the existing emissions from the extant (single shed) free-range layer facility and also the typical operation of the proposed facility, with the maximum proposed number of broilers (110,000 across 2 sheds) on a 36 day cycle with thinning at day 30. The results of the dispersion modelling have been presented in the form of:

- Illustrations of the odour footprint as isopleths for the criteria selected enabling determination of impact at any locations within the study area
- Tabulated odour concentrations at discrete receptor locations to facilitate the discussions of results.

12.11 Regulatory Standards and Guidance

In the UK there are no statutory numerical standards for assessing the predicted odour impacts. Odour impact criteria are based upon guideline documents, case law and research which differ, i.e. planning (to avoid significant detriment to amenity) or permitting (to avoid unacceptable pollution).

Numerical limits have derived from findings of some epidemiological assessments where modelled odour impacts have been compared to the findings of quality of live surveys; a dose-effect study. These studies have only been undertaken for a limited number of odour types; however they have been used as the foundation for the setting of acceptable odour standards.

The actual acceptable level of impact will depend on the nature of the odour. To account for this differing numerical limits are often not set.

UK Guidance

UK guidance identifies a range of odour impact criteria depending on the nature of the odour (i.e. its pleasantness/unpleasantness) and the likelihood of causing unacceptable impacts. Such criteria apply only to locations where an individual's exposure is likely to occur for prolonged periods of time i.e. residential properties. Where exposure is more transient (i.e. roads, footpaths etc.) the direct application of such criteria should be treated with caution.

Planning vs Permitting: Planning Policy Wales

The Welsh Government releasing Planning Policy Wales (Edition 10) in December 2018. This includes information for sites which will fall under the Environmental Permitting regime, regulated by NRW. Details of this are quoted directly from the document (paragraph 5.13.3) at section 3.2 of the Odour Report.

NRW H4 Guidance

NRW has published a number of guidance documents relating to odour assessment. These include the Horizontal Guidance EPR H4- Odour Management. This guidance proposes the use of installation – specific exposure criteria (benchmarks) as not all odours are equally offensive and not all receptors are equally sensitive.

The guidance states:

'...benchmarks are based on the 98th percentile of hourly average concentrations of dour modelled over a year that the site/installation boundary. The benchmarks are:

- One and a half odour units for most offensive odours
- Three odour units for moderately offensive odours
- Six odour units for less offensive odours

Examples of these three categories are:

- **Highly offensive**, e.g. biological landfill odours
- **Moderately offensive**, e.g. intensive livestock rearing
- **Less offensive**, e.g. bakery

These benchmark limits may be relaxed in cases where the source is familiar to the location. This is the case in relation to intensive agriculture in a rural setting.

Research relating to broiler farms indicates that a more representative nuisance threshold for an agricultural area should be anywhere from 3.3-8.8 as a 98th percentile of hourly means. This is consistent with guidance published by the EA in relation to nuisance thresholds as a function of site setting. The H4 benchmarks should therefore be seen as a guide of an odour issue being caused rather than an absolute limit value, particularly in an agricultural setting.

IAQM Odour Guidance

On 20th May 2014 the Institute of Air Quality Management released guidance on the assessment of odour for planning. This was updated in 2018. The guidance is for assessing odour impacts for planning purposes. It provides information relating to requirements for odour impact assessments.

The IAQM odour guidance requires a degree of professional judgement. Given the site setting and the number of residences potentially affected, the IAQM odour guidance may be used to classify to the impact from an intensive agricultural facility (i.e. for a 'moderately offensive odour) at a high sensitivity receptor as:

- 'negligible' at below 1.5 ouE/m3;
- 'slight adverse' from 1.5 ouE/m3 – 3.0 ouE/m3 as a 98th percentile of hourly means; or
- 'moderate adverse' impact above from 3.0 ouE/m3 to 5.0 ouE/m3 as a 98th percentile
  of hourly means.

Only a moderate impact would be regarded as 'significant' for purposes of environmental assessment when considering the overall planning balance.

12.12 Receptors Ventilation Flows and Emissions

Site Setting

Discrete receptor locations have been selected for comparative purposes to facilitate the discussion of predicted odour impacts, they represent the closest residential locations in each direction. The 8 receptors are presented within the Odour Report and a receptor grid has been used to allow the production of an odour isopleth drawing.

Maximum Scrubber Treatment Capacity

The maximum treatment capacity of the units means that under extreme circumstances (i.e when the ventilation exceeds the maximum design capacity of the scrubbers) a proportion of the air will be vented out of ridge vents to atmosphere. This is similar to the relationship between ridge and gable end fans for a standard (i.e. unscrubbed) poultry building. Details of the IPT Ventmax system assumed for purposes of this assessment are included in the Odour Impact Assessment. The IPT system has a maximum ventilation capacity of 120,000m3/hr (33.33m3/s).
Details regarding the ventilation rates and optimal house temperatures have been set out on the Odour Assessment at ***Appendix 9***. The key ambient temperatures would be as follows:

- Irrespective of bird age, the unit would be operated at minimum ventilation up to an ambient temperature of 15.7°C;
- The maximum transitional ventilation (33% of overall maximum) would not be exceeded until the ambient temperature of 22.7°C. At maximum transitional ventilation the capacity of the IPT Ventmax system would not be exceeded until Day 25 of the crop, when the ambient temperature would have to be greater than 23.5°C;
- For the largest birds (>27 days), maximum ventilation capacity would be required when the ambient temperature of reaches 26.7°C. At maximum ventilation the capacity of the IPT Ventmax system would not be exceeded until Day 19 of the crop, when the ambient temperature would have to be greater than 29.5°C;

Analysis of 5 years (2015-2019) meteorological data recorded at Sennybridge that temperatures very rarely exceed 22.7°C and have not exceeded 29.2°C over the 5 year data set. The data set out in the Ammonia Assessment indicates that the facility would be operating at the minimum ventilation for over 90% of the year. The temperature at which the maximum transitional ventilation would be reached for the bird older than 27 days would only be exceeded for fewer than 60 hours (or 0.7%) of the average year. This would need to coincide with one of the 72 days (assuming 8 crops) or 20% of the year when the bird of that age are being housed. There are only 18 hours in the 5 year data set (<4 hours per year) when the ambient temperature is above the 26.7°C required before the crop is at maximum ventilation for the largest birds.

For the above reasons it was considered appropriate to model the emissions from the scrubber unit stacks with no odour emitted from the roof vents as the chances of this occurring are very small and therefore the total mass emission of odour from the roof vents over any one year will be insignificant when compared with the

emissions from the scrubber. The 40% average odour abatement factor for scrubbing systems such as the IPT and equivalent units is consistent with that for other applications in Powys.

Emission Rates

The emission rates used are calculated from an internal concentration of odour taken from published values which indicate a likely range for a well run modern farm of 300ouE/m3 – 2300 ouE/m3 across a 36 day growth cycle. Emissions will vary across the cycle with peak during clearing out. Research has shown that the use of indirect heating, will result in a significantly improved building environment and lower emissions, particularly of ammonia and carbon dioxide. This in turn improves the growth rate and performance of the birds. The quality of the litter and in particular the moisture content, will also determine the overall odour emission.

12.13 Odour Impact Assessment

Model Domain and Assumptions

Modelling was carried out at 20m resolution over a 0.6km by 0.6km grid.

The temperature of the flows from the fans have been assumed at 22°C, which is at the lower end of the range for the entire cycle (younger birds will be houses at a temperature slightly above this). The velocity and stack diameter results in a flow per stack of 11 m3/s, which represents 118710 m3/h for the 3 stacks modelled (the maximum throughput of the unit is 120000m3/h). Emission rates are set out in the OIA.

Building Downwash/ Entrainment

Movement of air over and around buildings and other structures generates areas of flow re-circulation that can lead to increased ground level concentrations of pollutants close to the source. Where the stack height is less than 2.5 times the height of any nearby building, downwash effects and entrainment can be significant.

The houses have been incorporated into the dispersion model as detailed in the OIA modelling files.

Local Wind Speed and Direction Data

The closest Met Office sites to the site are:

- Trawsgoed WMO Identifier 3503 (62m AoD)
- Shobdon Airfield WMO Identifier 3520 (99m AoD); and
- Sennybridge NO2 WMO Identifier 3507 (307m AoD).

The windrose setting out frequency of wind speed and direction for 5 years of data is set out in the OIA and indicates a prevailing wind from the south-west.

Topography

Elevated terrain reduces the distance between the plume centre line and the ground level, thereby increasing ground level concentrations. Elevated terrain can also increase turbulence and, hence, plume mixing with the effect of increasing concentrations near to a source and reducing concentrations further away. The site is set on ground at approximately 315m AOD and the height of the surrounding land is highly variable. Information relating to the topography of the area surrounding the site has been used to assess the impact of terrain features on the dispersion of emissions from the site.

12.14 Results

Results may be compared against the benchmark criterion of 3 ouE/m3 as a 98th percentile of hourly means appropriate for a ‘moderately offensive’ odour. Given the site setting and the number of residences potentially affected, the IAQM odour guidance would regard the impact as:

- ‘negligible’ at, or below this concentration; or
- ‘slight adverse’ from 3 ouE/m3 - 5 ouE/m3 as a 98th percentile of hourly means; or
- ‘moderate adverse’ impact above from 5 ouE/m3 as a 98th percentile of hourly means.

The five year average odour exposures predicted as a result of emission from the facility are presented in full in the OIA and show that the odour impacts associated with the two shed operation are predicted to remain low (negligible) for all years.

A comparison table can be seen below:

Ref	Description	Existing Impact (ou_E/m^3)	Future Impact (ou_E/m^3)	Increase
D1	coed-cochion	0.05	0.12	0.06
D2	coed-yr-ardd	0.26	0.53	0.27
D3	cefnfaes house	0.18	0.35	0.17
D4	Residence (unnamed)	0.25	0.46	0.21
D5	Bryn Pedol	0.31	0.61	0.30
D6	Beili Gof 1	0.29	0.58	0.29
D7	Ffos-mascal	0.15	0.29	0.14
D8	Beili-bedw	0.11	0.21	0.10

If additional measures are taken to mitigate this odour, particularly in relation to prevention of odour within the houses through effective litter management (particularly when cleaning out the buildings at the end of the cropping cycle) this would be reduced still further. These additional operational measures (i.e. control of processes or emissions) remain matters for the environmental permitting process and therefore regulated through the Environmental Permit as detailed in a site Odour Management Plan to be submitted with the Permit application.

12.15 Conclusions from the OIA

The Odour Report presents a detailed odour impact assessment (OIA) of the proposed poultry development at Llwyngwilym Farm.

Dispersion modelling has been completed, which predicts that the proposed development is unlikely to lead to odour impacts at a level which would be regarded as unacceptable, when operated in accordance with best practice. Should the odour control measures detailed in a site odour management plan be followed during typical operation and abnormal events, these potential impacts will be reduced even further.

12.16 Odour Mitigation

The poultry unit will operate under an Environmental Permit issued by NRW. The facility must be managed to ensure compliance with the EP which will include measures to reduce odour.

The Odour Management Plan submitted with the EP will ensure that all measures are taken to reduce odour emissions. The EP guidance sets out that odour from litter and manure based systems may be minimised by increasing the dry matter content of the litter or manure, by both preventing spillages of water and providing

a drying mechanism. If the dry matter content is 60% or above, ammonia emissions are minimal. New buildings should be able to meet this. The following sets out general guidance with regard to odour mitigation:

Minimising odour from poultry and their housing

Problem	Actions to prevent or minimise odour
Dust	Dust emissions may be a problem particularly for larger birds. Odorous compounds may be adsorbed onto dust particles and the particles themselves may decompose releasing volatile compounds. It is important to: • Control the generation of dust within the house through management of litter moisture content and air quality • Minimise the amount of dust emitted from buildings • Ensure dust deposits around ventilation discharge points are cleared on a regular basis to prevent excessive build up. Minimising dust production through good housekeeping and animal husbandry would be cost effective, in addition to the obvious welfare benefits • Collect the water discharging from cleaning operations in sealed tanks The odour emission from a building can be dependent on particulate emission. Data suggests that removing the dust fraction from an odorous stream reduces the odour by about 65%
Litter quality	Litter quality is affected by: • temperature and ventilation; • drinker type and management; • feeder type and management; • litter material and depth; • condensation;

- stocking density;
- feed formulation and quality;
- bird health.

Investigate the minimum ventilation and heating requirements. In new houses ventilation should be designed to remove moisture.

Investigate increasing the initial depth of litter. A depth maintained at 10-15 cm should be sufficient to absorb the moisture loading.

Litter removed from the buildings at the end of the production cycle should be stored dry. The storage area should be away from residential areas.

In egg production a belt manure removal system (ideally with forced air drying) should be used to avoid the accumulation of manure from caged layers. Where manure falls directly into a deep pit, ventilation of the pit should be provided to keep the manure dry.

Duck manure tends to have a higher water content (around 30% dry matter) than other poultry litters, but the need for good hygiene and management practices are still relevant.

For all litters, the following measures will help to minimise odour emissions:

- remove of dead animals;
- maintain of drinking systems;
- provide sufficient straw/litter to bind nitrogen and prevent ammonia escaping.

Drinking systems

The management of drinking systems should ensure that all litter is kept dry i.e. moisture content is less than 40%.

- Check systems for leaks and take action as necessary
- Use nipple drinkers and drip cups (operate on demand) in preference to bell drinkers (always full of water)
- Site drinkers at the correct height to minimise spillage

The EP guidance also sets out odour management actions common to all intensive livestock operations (including pigs):

Odour management actions common to all intensive livestock operations

Problem	Actions to prevent or minimise odour
Animal Feed	**Selection and use** Chapter 2 *(of the EP Guidance)* gives guidance on the selection and use of feeds at different stages in the rearing cycle in order to reduce nitrogen excretion. A high protein diet increases the nitrogen and sulphur content of manure, contributing to emissions of ammonia to air and potentially other odorous compounds when the manure undergoes anaerobic degradation. **Feed additives** A number of different feed additives are available which claim to reduce odour from manure. In most cases these have not been proven sufficiently well for any to be recommended.
Feed delivery, milling, preparation, and storage	**Good housekeeping** • avoid accumulation of waste feed; • clean up spills; • avoid overflow and spillage from feed and drinking systems. **Reduce dust emissions** Odours may be absorbed onto particulate matter and then carried out of the building via the ventilation system. Avoid finely ground feeds and long feed drops onto floors as they increase dust emissions. **Closed systems** Carry out mixing and milling of dry foodstuffs using closed systems or in an environment from which emissions can be minimised. Deliver the feed to the storage areas, and from the storage container to the feeding station through a closed system to minimise dust generation.

Cover storage
Cover feed storage areas or use purpose built silos. You should protect these storage areas from collision damage

Storage of odorous by-products
The addition of odorous by-products such as whey and fish meal to feed may increase the odour level of the feed (and accumulated spillages will smell more). Storage of these products may also lead to odour and dust generation.

Carcass disposal

Removal frequency
Remove carcasses frequently to prevent odours building up.

Cover storage
Cover carcass stores to prevent access by birds or rodents using plastic bags or lidded bins where possible

Ventilation and humidity

Operation
Ventilation rates are determined by the needs of the animals and vary with season. Odour will be carried out of the houses with exhausted air and the exhaust rate will tend to be highest when the outside temperature is high. This generally occurs in the summer months when the potential to cause odour annoyance is highest.
Ventilation systems should be run at the optimum rate for the number of animals present. Insufficient ventilation capacity can lead to excessively high room temperatures which increase slurry/manure decay rates and hence odour emissions.

Atmospheric dispersion
Once odorous emissions leave the source they undergo dilution and dispersion in the atmosphere downwind of the installation. Where odours are released at height, they are likely to be more effectively dispersed than those released at a low level or, inadvertently, from open doors.
The design of ventilation systems is a specialist field but in general terms roof (apex) vents produce better dispersion of odorous releases than those positioned along the side of buildings (side wall vents). Increasing the height of vent discharge points above roof level may give better dispersion. Ducting the ventilation flow to a single stack, which emits at a much higher level will provide still further improvement although may have the effect of making the odour detectable further away than was previously the case.

	Stack height calculation can be fairly complex and needs to consider a number of aspects relating to the emissions and the rate of emission, the temperature, the local topography and the location of receptors. It is best undertaken by a specialist. **Clear dust deposits** Clear dust deposits around the ventilation discharge points on a regular basis to prevent excessive build-up
Dirty water management	**Prevent stagnation** Fit kerbs to concrete aprons to direct dirty water into collection tanks; • enclose dirty water collection systems; • empty and clean dirty water collection systems to avoid allowing anaerobic conditions to develop in settled sludge; • maintain drains and concrete areas; • quickly deal with dirty water generated when buildings are cleaned out at the end of the cycle.

The EP will include a comprehensive Odour Management Plan. Below is an example of a Standard Odour Management Plan which will include the following issues:

Potential Source	Minimisation Technique	Review Date
Broiler Production Housing	• Litter to be kept as dry as possible. • Ventilation appropriate for bird welfare and to prevent a build-up in humidity. • Staged protein reduction in diets based on age. • Leak proof drinking system, this will be inspected twice daily as a minimum in order to prevent wet litter. • Additional bedding material will be applied during each cycle in order to maintain dry litter. • Early disease detection as sick birds can cause poor or wet litter conditions.	Annually- June

	• The birds water consumption will be monitored daily along with humidity within the building. • Correct temperature will be maintained dependent on the stage in the production cycle. • Adequate building insulation will be installed during construction. • The buildings integrity will be maintained in order to prevent water ingress. • Routine end of cycle maintenance. • Maintain site cleanliness, any spillages will be dealt with promptly and correctly. • Site clean and foul water drainage systems will be properly maintained and kept clean in order to reduce odour.	
Carcases	• Mortalities will be collected daily and stored in sealed vermin proof containers until collected by a licensed agent. • Regular collection by a licensed agent, the frequency of which will be increased during the summer months in order to minimise odour issues.	Annually – June
Litter Removal	• Trailers parked as close as possible to the buildings doors in order to reduce the amount of dust being blown away. • Trailers will not be overfilled to avoid spillage. • Trailers carrying the litter will be sheeted. • Litter removal not to take place during inappropriate weather conditions	Annually – June
Washing Operations	• All wash water will be adequately contained.	Annually - June

	• Terminal hygiene plan to be followed at all times. • Suitable chemical products will be selected and the correct dilution rates will be adhered to. • Limit washing operations at weekends and bank holidays where possible. • Washing operations not to take place during inappropriate weather conditions	
Stored Litter	• Any temporary field heaps sited away from sensitive receptors	Annually - June
Litter/Slurry Spreading	• Limit spreading at weekends and bank holidays • Limit spreading in still and humid conditions • Limit spreading close to neighbours • Compliance with manure management plan • Incorporate litter as soon as possible • Export off holding for use in AD unit	Annually - June

Odour Related Issue	Potential Risks and Problems	Actions taken to minimise odour and odour risks
Manufacture and selection of feed	Milling and mixing of compound feeds The use of poor quality and odorous ingredients Feeds which are unbalanced in nutrients leading to increased excretion, litter moisture and emissions of ammonia and other odorous compounds to air	No on site milling and mixing Feed specifications prepared by feed compounders nutrition specialist Feed supplied from UKASTA accredited feed mills so approved raw material used
Feed storage and delivery	Spillage of feed during delivery and storage	Feed delivery systems sealed to minimise atmospheric dust

	Creation of dust during feed delivery	Any spillage of feed around the bin is immediately swept up The condition of feed bins checked frequently so any damage or leaks can be identified
Ventilation system	Inadequate air movement in the house leading to high humidity, wet litter and ammonia build up Inadequate system design causing poor dispersal of odours	Ventilation systems regularly adjusted according to the age and requirements of the flock Ventilation system designed to efficiently remove moisture from the house Ventilation system routinely checked to ensure efficient functioning to specification
Litter management	Odours arising from wet litter (see above) The use of insufficient or poor quality litter Spillage of water from drinking systems Disease outbreaks leading to wet litter	Controls on feed and ventilation (see above) help to maintain litter quality. Additional controls include: Use of nipple drinking systems which minimise spillage Insulated walls and ceilings to prevent condensation Concrete floors to prevent overcrowding Use of a health plan with specialist veterinary input used as necessary
Carcass disposal	Inadequate storage of carcasses on site Carcasses left on site too long	Carcasses are placed in sealed containers immediately after they are removed
House clean-out	Creation of dust associated with litter removal from houses Use of odour products to clean the houses	Litter is carefully placed into trailers positioned at the entrance to each house. When full the trailer is covered/sheeted and not overfilled Only approved and suitable products are used. Clean-out not to take place in

		inappropriate weather conditions
Used litter	Storage of used litter on site Transport of litter and applications to land	There is no storage of used litter outside the houses at any one time. Yards are cleaned down at clear out. Litter is transported in covered trailers and transported off site Storage strictly in accordance with approved Manure Management Plan
Dirty water management	Standing dirty water during the production cycle or at clean out Applications of dirty water to land	Areas around the house are concreted and remain clean during the production cycle At clean-out dirty water is directed to sealed underground tanks for storage. It is then spread onto land as weather conditions permit.

12.17 Conclusions

The result of the modelling carried out predicts that the proposed development will not lead to unacceptable odour impacts. Should the odour control measures detailed in a site odour management plan be followed during typical operation and abnormal events, these potential impacts will be reduced even further. Any odour impact will only be of slight significance.

13. Drainage Strategy

13.1 Introduction and Legislation

The impact of the proposed poultry development on water resources has been assessed in this Chapter of the ES. This includes drainage implications, assessment of impacts on surface and groundwater - dirty water, and manure management/spreading implications.

The proposed development site and its access route is located with Zone A of the Natural Resources Wales flood risk Development Advice Map and is therefore at an overall low risk of flooding from all known sources. In accordance with Technical advice note 15: development and flood risk, a detailed assessment of flood risk is therefore not required for the proposed development. A drainage strategy has been designed which demonstrates the sustainable drainage (SuDS) measures included within the scheme to mitigate against downstream flood risk.

Guidance sets out that *'the use of soakaways should be investigated in the first instance for surface water disposal. Percolation tests and the sizing of the soakaways should be designed in accordance with BRE Digest 365 to cater for a 1 in 100 year return storm event plus an allowance of 25% for climate change. Alternatively, we accept soakaways to be designed for the 1 in 10 year storm event, provided the applicant submits details of flood routing to show what would happen in an 'exceedance event' above the 1 in 10 year storm event. Flood water should not be affecting other buildings or infrastructure. Full details, calculations and location of the percolation tests and the proposed soakaways should be submitted for approval'.*

If soakaways are not feasible, drainage calculations, to limit the discharge rate from the site equivalent to a greenfield runoff rate, should be submitted for approval. The attenuation drainage system should be designed so that storm events of up to 1 in 100 year + 25% for climate change will not cause flooding of any property either within the proposed development or any other in the vicinity.

A Drainage Assessment Report has been prepared by Berrys and the results set out in this Chapter. The full report can be seen at ***Appendix 9.***

Guidance provided from the UK Technical Advisory Group (UKTAG) provides an overview of the environmental standards for water quality and hydromorphology arising from requirements set by the European Water Framework Directive (WFD). The Nitrate Pollution Prevention Regulations 2008 regulate the use of organic and inorganic fertilisers within Nitrate Vulnerable Zones.

The leaching of Nitrogen from farms can have a significantly detrimental effect on the landscape. The European Commission has consequently provided a legislative framework to govern areas of land which could be susceptible to pollution this is the Nitrates Directive and is currently enforced within each member state. This has manifested itself within the UK as the Nitrate Pollution Regulation 2008; the land areas which are within this regulation are known as NVZs.

This framework applies restriction on the storage and application of Nitrogen based fertilisers, both organic and inorganic within these NVZs. The farm is within a surface water NVZ.

13.2 Methodology

The assessment has predominantly involved desk based study involving the collation and assessment of relevant information. Sources of information have been identified in the Drainage Assessment at ***Appendix 9.***

13.3 The Receiving Environment and Sensitive Receptors

Groundwater and Geology

The British Geological Society and the Cranfield University Soilscapes maps have been consulted which show the site as having loamy, freely draining soils underlain with the Rhayader Mudstone formation. Mudstones have significantly varying degrees of permeability and the depth of the bedrock is unknown, so therefore the actual permeability of the ground below the drain invert will need to be verified prior to the drainage scheme design. Infiltration tests will be carried out on the site in accordance with BRE Digest 365 to verify the ground infiltration rate prior to preparing a detailed drainage scheme for approval by the SAB.

Surface Hydrology and Drains

An unnamed watercourse is located to the north of the development site, which runs to the River Wye located to the south west at Rhayader. This watercourse is available for a controlled discharge from the development, as it's within the applicant's ownership and the development land presently drains to it.

13.4 General Risk and Contamination

Assessment of Potential Impacts

The proposed development will result in an increase in poultry manure being produced on the holding. This will be utilised as a soil improver on the farm arable land. The manure will be stored in a sealed manure store before being spread on the land.

Areas of hardstanding may be used for the temporary storage of chemicals.

Source, Pathways and Receptors

Sources:

- Site Development – storage and use of chemicals, fuels and oils and concrete during the construction and decommissioning phase
- Accidental release of dirty washwater or chemicals during clean-out periods

Pathways:

- Seepage of chemicals/oils into groundwater through permeable ground
- Migration of leaked materials via baseflow to surface water courses

Receptors:

- Surface Water – ditch/watercourse to south of site
- Groundwater
- Water Supplies

Impacts:

- Pollution of surface water during construction and decommissioning
- Pollution of groundwater during construction and decommissioning
- Pollution of surface/ground water by chemicals or dirty washwater from site operations
- Obstruction of surface water courses causing flow alteration

13.5 Mitigation

The main mitigating feature of the development will be that all operations will take place either within the buildings or on the hardstanding areas around the buildings. The design of the poultry development also includes drainage management and pollution prevention features which will help to protect surrounding water features. These include reinforced concrete floors which are waterproof and so preventing potential of manure effluent seepage into groundwater. The dirty wash water from clean-out will be directed to dirty water tanks capable of taking the required quantity plus allowance for heavy rain during the clean-out periods. The tanks will

have level indicators so it can be quickly identified when the tanks need emptying. A diverter valve can also be connected to the drainage system for the hardstanding area which will divert the yard water either to the Sustainable Drainage System or to the dirty water holding tank.

All chemical substances and hazardous materials are to be stored in accordance with NRW guidelines. All diesel fuel and lubrication oils used during the construction period will be stored in bunded areas; diesel will be contained within double skinned tanks. Bunded areas will have a 110% capacity of the storage tank.

During the construction and decommissioning phases it is possible that spillage of oils or chemicals could occur which could if uncontrolled result in the contamination of groundwater beneath the site or pollution of surface water through run-off from hard standing surfaces. Mitigation during construction and decommissioning will include ensuring that works should be avoided, or sensibly managed, in accordance with adverse ground and/or weather conditions occurring such as heavy rainfall or waterlogged soils. A minimum 5m wide buffer zone should be left between any works associated with the construction of the proposed development, or the plant itself and any watercourses. Should any of the works during construction be likely to affect a local watercourse (e.g. diversions - whether temporary or permanent), permission will need to be sought from NRW well in advance of construction commencing. This should not be necessary.

During operation of the site, there could be accidental minor leaks and spills or the regular use by lorries could have the potential to contaminate run-off with oil or hydrocarbons. This could be flushed into the ditch/watercourse. Similarly, this could infiltrate shallow groundwater either through cracks in hardstanding or run-off. Groundwater could also be contaminated through dirty wash-water if there are poor operational practices. However, the shallow geology is impermeable and it is unlikely that there would be any major migration of any released contamination.

The storage of polluting materials will be kept to a minimum where practicable and alternative inert materials used instead. Absorbent mats/pads, absorbent granules and sand will be made available, and site operatives trained in their use, to deal with any spillages. Machinery and materials will be stored away from water features.

During construction the use of concrete will be monitored and pre-cast concrete used where possible. Any washing of concrete vehicles necessary on site will take place well away from the watercourse.

During operation any activity that involves significant risk of oil/hydrocarbon spillage will be subject to specific risk assessment under EP Regulations.

Implementation of the above mitigation will ensure the residual impacts on the identified receptors and their significance are minimised.

13.6 Drainage Assessment

A Drainage Assessment prepared by Berrys can be seen at ***Appendix 9*** of this report which follows the methodology set out above. The findings of this report have been set out in this section.

Surface Water Drainage

In accordance with the Sustainable Drainage Systems Standards for Wales, Standard S1 it is anticipated that surface water will be disposed of through a combination of rainwater harvesting (Priority Level 1), infiltration to ground (Priority Level 2) and discharge to an on-site watercourse (Priority Level 3).

The British Geological Society and the Cranfield University Soilscapes maps have been consulted, which show the site as having loamy, freely draining soils underlain with the Rhayader Mudstone formation. Mudstones have significantly varying degrees of permeability and the depth of the bedrock is unknown, so therefore the actual permeability of the ground below the drain invert will need to be verified prior to the drainage scheme design. Infiltration tests will be carried out on the site in accordance with BRE Digest 365 to verify the ground infiltration rate prior to preparing a detailed drainage scheme for approval by the SAB.

The proposed system of surface water drainage will consist of various components to collect, convey and treat surface water. It is propose that water from the building roofs will be collected via a combination of rainwater harvesting tanks and stone-filled filter drains. The filter drains will provide a level of infiltration, source control / upstream attenuation and a level of treatment before flowing to the downstream soakaway tanks or system of attenuation. The yard areas of the development will require a system of positive drainage intercepted by gullies, with diverter valves fitted for times of washing down vehicles and residual muck deposited on the concrete surfaces following cleaning of the buildings between cycles. During washing down, the diverter valves will be engaged to direct water to the underground effluent tanks in order to prevent pollution of the surface water system.

Should the ground infiltration rates prove to be inadequate to allow the disposal of all site water via soakaways, then a system will be designed to use a combination of infiltration and attenuation. An unnamed watercourse is located to the north of the development site, which runs to the River Wye located to the south west at Rhayader. This watercourse is available for a controlled discharge from the development, as it’s within the applicant’s ownership and the development land

presently drains to it. The surface water post-development would therefore follow the same flow path as the existing land drainage. It is considered that an attenuation pond could be constructed with a flow control at the pond outlet, which would limit the discharge from the pond to the greater of 2 l/s per hectare of the equivalent 1in 1 year greenfield runoff rate calculated for the site.

The surface water system will be designed to manage a 1 in 100 year (1% Annual Probability Exceedance) return period. Exceedance routes will built into the landscaping design and will direct surface water to flow to the infiltration features and/or pond, with an ultimate final flow path to the watercourse. This will mimic the existing natural land drainage routes. If a pond is required, this will provide a level of freeboard to contain water from lower probability return period events without discharging at the surface. This will also provide a level of safety should the pond outlet become blocked during a rainfall event.

It is considered that the proposed surface water drainage strategy outlined above meets the requirements for the national and local sustainable drainage requirements. The proposed system will mimic the existing pre-developed site conditions by providing infiltration to ground where available and by discharging water from the designed system at greenfield run off rates. Full designs and modelling reports will be prepared at the detailed design stage and will be submitted to the SAB for approval prior to construction works commencing on site, as required by Schedule 3 of the Flood and Water Management Act 2010. The proposed surface water features will remain private and will be maintained by the applicant. The system outlined above is not considered to have any special maintenance requirements.

Foul Drainage

No staff welfare or office facilities are proposed for the development, as these are available at the farm. Therefore, a system for disposing of human foul waste is not required for the development.

Dirty water tanks will be required to collect effluent from washing down operations. Linear drains discharging to the tanks will be provided at the building doors to collect dirty water during cleaning operations. Also, diverter valves will be provided for the yard drainage gullies so that dirty water can be directed to the tanks during washing down. When the yard is ‘clean’ during normal operations, the valves will be set to discharge surface water to the SuDS. The effluent tank system will be designed and specified to comply with The Water Resources (Control of Pollution) (Silage, Slurry and Agriculture Fuel Oil) (Wales) Regulations 2010. Tanks will be provided for the buildings and corresponding yard and will provide the required level of storage as stipulated by the regulations. High-water level alarms will be fitted to

the tanks to prevent pollution events. The tanks will be periodically emptied, and the effluent disposed of in accordance with the appropriate rules or regulations.

13.7 Surface Water/Groundwater – Dirty Water

Dirty Water Production

All dirty water from washing down will be collected in an appropriate tank located under the yard area. Valves will be provided in the system to prevent dirty water entering the main system. All dirty water collected from washing down after each crop will be collected in tankers and transported and spread on the farmlands.

Conclusions

All dirty water will be collected and appropriately spread on the farmlands within the ownership of the applicant. The use of a separation valve will mean no dirty water enters the attenuation system or receiving ditchcourse/watercourse.

Cumulative Effects

Consideration of other nearby planned or permitted development is required to determine whether the impacts arising from proposed development could be exacerbated by impacts arising from other developments. The main potential risks are associated with increased areas of hardstanding. The potential impacts include increased flood risk and increased risk of chemical and dirty water contamination. No cumulative impacts have been identified.

Follow Up and On-going Actions and Procedures

Short term surveillance monitoring will be undertaken to ensure that no detrimental impacts occur during the site construction, decommissioning and operation. Such monitoring will be carried out by the site operators in accordance with requirements set by the Natural Resources Wales.

13.8 Dirty Water and Manure Management

The dirty water management has been dealt with in above. Similarly, the manure produced by the poultry units will be transported straight off the site following each clean-out.

A Manure Management Plan will be produced as part of the permitting process. Manure or dirty water is not spread adjacent to any watercourses or ditches.

13.9 Conclusions from the Drainage Assessment

A drainage strategy has been devised for the proposed broiler poultry development at Llyngwilym Farm. It is considered that the details outlined in the Drainage Assessment provides a sufficient level of information on the methodology used to develop a surface water and foul drainage strategy for the proposed development site. This should therefore offer confidence to the LLFA and SAB that the development can be adequately drained, without increasing the risk of on site or off-site flooding.

14.Summary and Conclusions

The following table summarises and concludes the previous technical assessment chapters with regards to the proposed poultry site extension at Llwyngwilym.

Key Issue	Potential Impact	Principal Mitigation	Residual Impact Significance
Air quality, health and climate	Effects on designated habitats and ammonia emissions and deposition	Use of ammonia scrubbing system to reduce odour, ammonia and dust	Not significant
Landscape and visual impact	Direct impacts on landscape features	Choice of site, levels and landscape work, sensitive building design	Not significant
	Landscape character	Choice of site, levels and landscape work, sensitive building design	Not Significant
	Visual amenity	Choice of site, levels and landscape work, sensitive building design	Not significant
	Lighting	Minimising light spill and timing of lighting	Not significant
Historic Environment and archaeology	Impact on setting of heritage assets	Choice of site, levels and landscape work, sensitive building design	Not significant

Traffic	Increase in HGV traffic	Good management leading to saved movements	Not significant
Amenity	Odour	Management practices, scrubber system. Best Available Technique.	Not significant
	Flies	Follow best practice guidance and ensure control measures in place, store muck in building	Not significant
	Vermin	Management practices and maintenance to prevent breach of stores etc	Not significant
	Dust	Management practices and use of Best Available Technique to reduce dust	Not significant
Ecology	Designated sites	Choice of site and good management/BATS. Ammonia scrubbers	Not significant
	Improved grassland	Choice of site and good design	Minor significance
	Trees and hedgerows	Avoid direct disturbance to retained features and control of lighting.	Not significant

	Marshy grassland	Control of lighting	Not significant
	Watercourse	Control of lighting	Not significant
	Badger	Buffer works, safe working measures	Not significant
	Bats	Control of lighting, bat boxes	Not significant
	Dormouse	Control of lighting	Not significant
	Otter	Pollution control and drainage methods	Not significant
	Birds	Hedge planting	Not significant
	Great crested newt	Appropriate safe working methods	Not significant
	Reptiles	Appropriate safe working methods	Not significant
Noise and vibration	Operation of unit and plant and machinery	Noise management to form integral part of day to day management	Minor significance
	Traffic noise and vibration	Sensitive timings of vehicle deliveries, managing peak flows.	Minor significance
Water resources	Construction and decommissioning – water quality (surface runoff/infiltration)	Use of appropriate bunding and storage, monitoring of operations and training staff in emergency procedures.	Insignificant impacts – low risk
	Operations – pollution by oils, hydrocarbons and dirty water (runoff, direct infiltration)	Adequate dirty water storage and operations to take	Insignificant impacts – low risk

	place in buildings and hard standing	
	Compliance with EA guidance and EP, use of bunded areas, storage of chemicals, oils etc in appropriate bunded areas and tanks etc	
Flood risk	Drainage Design. Sustainable Drainage Systems (SuDS).	Not significant
Surface and groundwater pollution	Adherence to Nitrate Pollution Prevention regulations if applicable or Code of Good Agricultural and Environmental practices.	Not significant