Environmental Statement

ERECTION OF POULTRY UNIT

RJ HUGHES & CO

October 2020

BERRYS

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PROJECT
Erection of broiler poultry unit at Argoed Farm.

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1. Introduction

1.1 Introduction to the Proposed Development

The applicant, R J Hughes & Co, is a family farming business which consists of Roger and Jane Hughes and their daughter Molly and sons Harry and George. The main farmstead is at Argoed and is owned by the family with additional land being rented in. Cropping currently consists of 400 acres of maize, 290 acre of Rye, 160 acres of wheat and 55 acres of grassland. A proportion of the crops grown are used as feedstock in the on-farm anaerobic digester (AD) plant. There is a 32,000 bird egg production unit and a small suckler cow herd. The chicken manure from the egg production unit and the cattle muck is used as feedstock in the AD unit. The AD unit produces both heat electricity some of which is used on the farm with the majority of electricity exported to the grid.

To help ensure the viability of the farming business for future generations, and to help meet the high demand for chickens, it is proposed to locate four broiler poultry buildings and associated infrastructure on the farmland. Three of these units will be new build and the existing egg unit will be converted into a fourth broiler building.

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 Argoed Farm, the farmstead for which is positioned approximately 700 metres to the south east of the B4569 highway running between Trefeglwys 1.3 miles by road to the south west of the site, and Caersws 3 miles to the east. Access to the yard is gained using the unnamed road which adjoins the B4569 to the north. The farm occupies a rural location, centrally positioned in relation to the agricultural land owned and farmed by R J Hughes & Co.

The existing egg production building is located to the east of the main farmstead and consists of an egg laying unit and two feed bins. The site for the proposed new broiler units is immediately to the north of the existing egg unit which is to be converted. The site is currently down to grassland and is grazed by livestock and cut for hay/silage. There is existing access into the site which was improved as part of the development of the existing poultry unit. The total site area is around 3.20ha. The farm AD site is situated to the south of the existing egg unit. 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
- Landscape and Visual Impact Assessment – Lingard Farrow Styles

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 location occupies the exiting egg unit and parts of two separate grassland fields behind. The main farm buildings are approximately 180 metres to the west and the AD unit 80 metres to the south. 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 on north side of the Trannon Valley. The Afon Trannon flows from west to east through central parts of the Study Area, falling from around 150m AOD to 125m AOD. The landform around the valley is steeply undulating in places. The existing poultry unit is located on a flat area at around 170m AOD. To the north of this is a bank which rises to 175m AOD. The fields then rise towards the northern edge of the site. Further north beyond the site the landform continues to rise to approximately 205m AOD before dipping slightly to a minor road. Immediately south of the site the landform descends towards the Afon Trannon. This slope features an area of mature oak woodland. The principal land use is agricultural with semi-regular boundaries marked by hedgerows. Trees are a notable landscape feature.

Highways

The proposed development site is accessed from the internal farm access roads passing through the farm and will utilise the existing egg unit access route. The farm is accessed via the existing tarmac track linking to the C2180 located to the north west of the site. Traffic then travels along the eastern stretch of the C2180, where it links with the B4569 approximately 1.2km to the north east of the site.

This access route was improved as part of the existing egg layer unit under the consent reference P2008/1068 and a subsequent amendment P/2010/0380.

Population/Socio Economics

The closest residential dwellings are the farmhouse at Argoed Farm which is occupied by the applicants and Tan-y-Graig which is occupied by the applicant's sister. There are several other induvial properties within 400 metres of the site which have been considered in this ES. The village of Trefeglwys is approximately 1.3 miles by road to the south west of the site, and Caersws 3 miles to the east.

Noise

Existing, local land-use is predominantly farming including the existing egg unit. The predominant noise source is from the existing agricultural activities.

Arboriculture

Hedgerows are present along the western and eastern boundaries in the field to the rear of the existing egg unit. A row of young silver birch have been planted and partially fenced within the eastern part of the grassland field to the rear and immediately to the north of the grassland field there is a steep bank which has been planted with a mix of young broadleaved trees and scattered gorse.

There is a small area of broadleaved woodland immediately to the south of the site.

Ecology

The site comprises the existing poultry unit and parts of two fields dominated by improved grassland. The surrounding landscape consists of extensive agricultural fields bordered by hedgerows and trees with scattered rural properties.

There are no statutory designated sites within 5 km of the proposed development site and no Ancient Woodland or Priority Habitats.

Coedydd Llawr-y-glyn SSSI / SAC is just over 5 km from the existing and proposed poultry sheds. The SSSI / SAC is one of several sites representing old sessile oak woodland in the core of its Welsh range and comprises a group of woodland blocks set around a series of connected valleys.

Water Sources and Drainage

Water from the site presently runs down to an existing ditch located to the north of the access. The ditch leads to an ordinately watercourse at the bottom of the slope, crossing beneath the access track. The ordinary watercourse then runs off to the south and eventually joins the Afon Trannon, which is a tributary to the River Severn / Afon Hafren.

The Afon Trannon runs east to west approximately 0.3 km south of site and enters the River Severn approximately 3.5 km to the east.

Cultural Heritage

There are no designated heritage assets within the development site, however there are historic assets nearby the site including the listed building known as Gwaelod and a long red brick barn.

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.

Nearby Poultry Sites:

There is an existing free range egg production unit at Argoed Farm housing 32,000 laying birds. It is proposed to convert this building to a broiler building as part of the application.

In addition to the Argoed layer building the following poultry units are within a 5km radius of the site:

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 buildings. The most suitable location for the poultry buildings was considered to be on the site of the existing layer unit.

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

Much of the land owned by the family is situated around the main farmstead at Argoed. Further land is rented, however it is not suitable to locate the broiler units on rented ground due to lack of security so this was discounted.

Argoed Farm is constructed on sloping land and the house and some of the farm buildings are at different levels. This limits suitable locations to site a poulty unit if it is to be sited close to the existing farm buildings. Biosecurity is also an additional factor when there are existing livestock buildings on the holding. There is an existing egg laying building approximately 180 metres to the west of the main farmstead. This site was considered as it could accommodate a larger poultry unit than currently there and is close enough to the main farmstead for operational efficiency. Furthermore, the farm AD unit is only around 80 metres to the south of the site meaning that the heat produced can be easily utilised to heat the poultry buildings.

There is already a poultry building on this site meaning it is not a completely green field site. It was felt that the site would therefore have less visual impact than an isolated site further away. There is also an existing access track to the unit and services are already in place.

The land around Argoed Farm is quite steeply sloping in places which poses additional construction issues, but can actually help to prevent significant views as the buildings can be cut into the landform. The land behind the existing poultry unit slopes up relatively steeply although by using platforms it was considered that four poultry units could be accommodated.

Once the existing poultry site was identified as a suitable site, investigations were carried out as to whether the existing layer building could be converted to house broiler chickens or would need to be demolished. If is considered that the existing

shed can be adapted and would therefore be beneficial in terms of costs and new build on the site.

The proposed site offers significant advantages in terms of efficiency and practical management. The manure from the poultry unit will go to the farm AD plant just 80 metres to the south meaning that it will not need to be transported on public roads. In addition the heat produced by the AD unit will be used to heat the poultry buildings meaning that a renewable energy source can be utilised.

For the above reasons it was decided that locating the broiler units on the site of the existing layer unit would be the most suitable and have less on an impact than siting the buildings on a completely greenfield location.

3.2 Site Location

The site of the existing layer unit was chosen as the most suitable location in relation to landscape and visual impact, residential amenity, access, and site efficiency. It will utilise an existing access, and make use of an existing building. The site is of little ecological value as it is partly the existing egg unit and part improved grassland. The closest residential dwellings to the site are owned and occupied by family members. Odour and noise assessments have been prepared to ensure that the proposed development would not have an unacceptable impact on residential property.

The most practical orientation for the buildings would be parallel to the existing layer 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. It would not be possible to site the new buildings to the south of the existing layer unit as there is a steep wooded drop down to the AD site.

There are no other existing poultry units within 400 metres of the site which could give rise to cumulative impacts. The proposed development would lead to the addition of 220,000 broilers but the reduction in 32,000 free range laying birds. This would be beneficial in terms of possible impact from ammonia on local SSSI sites. An ammonia assessment has been carried out which shows a betterment.

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, R J Hughes & Co, is a family farming business which consists of Roger and Jane Hughes and their daughter Molly and sons Harry and George. The main farmstead is at Argoed and is owned by the family with additional land being rented in. Cropping currently consists of 400 acres of maize, 290 acre of Rye, 160 acres of wheat and 55 acres of grassland. A proportion of the crops grown are used as feedstock in the on-farm anaerobic digester (AD) plant. There is a 32,000 bird egg production unit and a small suckler cow herd. The chicken manure from the egg production unit and the cattle muck is used as feedstock in the AD unit. The AD unit produces both heat electricity some of which is used on the farm with the majority of electricity exported to the grid.

To help ensure the viability of the farming business for future generations, and to help meet the high demand for chickens, it is proposed to establish a broiler chicken unit. This will consist of 3 purpose built poultry accommodation buildings, converting the existing layer building into a fourth broiler shed, and associated infrastructure.

4.2 Proposed Development Overview

To help to diversify the farm business it was decided to establish a broiler poultry unit at Argoed Farm. The most suitable location was decided to be on the site of the existing layer unit.

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

The proposed broiler poultry unit will consist of three new poultry rearing buildings measuring 121.92m x 20.12m with ridge heights of 4.82m. The tops of the ventilation chimneys will be at 5.67m. Feed bins will be situated to the front of the buildings and have a height of 5.63m. 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 existing layer building will be converted to provide broiler accommodation. It will be fitted with the same ventilation system as the new buildings.

The buildings will be heated from the existing AD unit approximately 80 metres to the south of the site.

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 up to 36 days with a thin at 30 days. There will be at least a 10 day turn around period 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 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 from the on-farm AD unit. 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 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

Three purpose designed broiler poultry buildings will be constructed with the existing layer building being converted into a fourth broiler building. 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.

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.

Design ventilation flows have been provided by the designers of the facility. The 15 No. roof ridge fans per building are likely to be Fancom 800mm units, or equivalent. Each fan is capable of moving a maximum of 17500m3/hr (4.9m3/s) air. The units will also be fitted with gable end tunnel fans in case of additional ventilation requirement on the hottest days.

There will be 2 feed bins situated to the front the new buildings and to the side of the existing building which will have a capacity of 30 tonnes and measure 5.63 metres in height.

The existing on-farm AD unit will be used to provide heat to the poultry buildings with back up gas heaters for emergencies. Anaerobic digestion (AD) is a natural biological process which transforms biomass (feedstock) into useful bio-fertiliser (digestate). Organic waste, including animal manure, contains valuable nutrients and a significant amount of nitrogen locked up in unavailable forms. As a fully enclosed in-vessel process AD facilitates the retention of all nutrients, converting them into available forms whilst preventing unwanted pollution.

The production of renewable energy results from the capturing of biogas, comprising 60% methane and 40% carbon dioxide, which is released throughout the AD process. The biogas produced can be used in a number of ways, including use in a conventional boiler, the upgrading and injecting of biogas directly into the local grid network, or use as fuel for a Combined Heat and Power (CHP) engine which produces electricity as is the case at Argoed Farm.

There is a benefit from having poultry units and AD units together as the poultry manure is used as feedstock for the AD process. The AD unit produces electricity and heat through a CHP unit with the heat being used to heat the poultry buildings. The cycle is complete as the resulting digestate from the AD process is used as soil improver on the land to produce feedstock for the AD unit or animal feed.

Due to the sloping nature of the landform, the site will be tiered by cutting the buildings into the slope. There will be two buildings (including the existing layer building) at the existing yard level and two buildings on a yard level of 103.25. The finished floor level of the lower buildings will be 100.27 and the higher buildings 103.27. The yard area will extend around the sheds to allow for access and turning. The buildings will be accessed via the existing track which runs up to the existing layer building. Vehicular access will be provided to the second tier with the land cut back and retained. A landscaped embankment will be created around the higher buildings.

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 on site to create the landscaped embankment 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 Roger Hughes. 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 in the farm AD unit around 80 metres to the south of the poultry site. The chicken manure from the existing layer unit is currently utilised in the AD unit along with cattle slurry and a supplemental tonnage of maize and fodder beet. The chicken muck will be taken straight off the site to be stored in the existing storage shed on the AD site as currently happens with the manure from the layer building. Broiler manure is more suitable for use in AD units than layer manure.

The digested material form the AD process is discharged from the digester tank and passed over a separator which will separate the digestate into solid and liquid form. The liquid digestate is stored in the digestate tank and the solid portion is collected in the clamp positioned below the separator. Both solid and liquid digestate is then transported to the land farmed by the applicant for use as an odourless alternative to spreading raw slurry and chicken litter.

The proposed system of surface water drainage will consist of various components to collect, convey and treat surface water. It is proposed 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 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.

Water to supply the poultry unit will be supplied by the existing two farm boreholes situated on land close to poultry units.

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.

R J Hughes & Co 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 R J Hughes & Co 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 Hughes family.

The buildings are designed to be highly efficient and will incorporate modern ventilation systems. The building will be heated from the on-farm AD unit which is a renewable source of energy. 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 220,000 birds split between the 4 buildings.

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 closest residences to the poultry facility are those associated with Argoed Farm (i.e. the applicant, family and tenants).

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.

Design ventilation flows have been provided by the designers of the facility. The 15 No. roof ridge fans per building are likely to be Fancom 800mm units, or equivalent. Each fan is capable of moving a maximum of 17500m3/hr (4.9m3/s) air. The units will also be fitted with gable end tunnel fans in case of additional ventilation requirement on the hottest days.

The facility will be of a modern design, utilising the current best practice control measures for minimisation of ammonia impact, including optimisation of diet for the growing birds and the use of nipple drinkers to reduce litter moisture content. For example, high litter moisture content, low oxygen levels, small particle size, high temperatures and low pH encourage anaerobic bacterial activity and the generation of ammonia, the facility will operate in a manner which discourages such activity.

6.3 Ecological Receptors

Ecological site searches 2km (local sites and AW) and 5km (SSSI and European sites) have been carried out. These confirm that there are no sites with National or European interest within 5km; the closest being the Coedydd Llawry- glyn Special Area of Conservation and SSSI which is just outside this screening area and is designated as an acid sessile oak (*Quercus petraea*) woodland.

BIS & LERC Wales Ltd have provided details of potentially sensitive ancient woodlands and locally designated sites within 2km of Argoed Farm. These have been cross referenced against NRW open data sensitivity maps.

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

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

Potential sources are:

- Argoed Farm – existing
- Argoed Farm – proposed
- Baseline – existing
- Other farm in close proximity

Where the proposed scheme represents a betterment in relation to the existing operation, i.e. where the scheme is approved the impacts from Argoed Farm will be lower than for the existing, no further assessment of baseline or potential in-combination sites is required. This is because, irrespective of the baseline and any in-combination sites, the ammonia impacts from Argoed Farm will result in an improvement should permission be granted.

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 Model Inputs

Two scenarios have been modelled in order to quantify the impacts from Argoed Farm. These represent:

- Scenario 1: The existing scenario, with 32,000 free range layers birds housed in 1 building and able to move within the range; and
- Scenario 2: The proposed broiler facility with 220,000 birds housed in 4 buildings.

The ammonia emitted from Argoed Farm under the existing situation has been based on assumption that the birds will spend a proportion of their time in the house and the remainder on the range. The proportion of droppings that are deposited in the house and on the range is skewed by the time spent roosting. A ratio of 80% indoors and 20% outdoors has been adopted in this assessment based on recent NRW consultation responses for other similar schemes:

- 32000 birds total;
- 80% of droppings in the house (equivalent to 25600 birds); and
- 12% of droppings on the range (equivalent to 6400 birds).

The ammonia emission rates have been calculated using NRW and EA guidance factors. These can be seen in the ammonia assessment at ***Appendix 2***.

A total of 398 discrete receptors have been used in order to represent the ancient woodland sites shown on the BIS 2km site search. There are no relevant European sites, SSSI or local designations. In some cases more than 1 discrete receptor has been used to represent an ancient woodland site, in particular 371 points have been used (on a 5m grid) for the adjacent woodland in which the laying birds currently range. The NRW opendata sensitivity maps show that there are no ancient woodlands sensitive to ammonia within 2km of the site.

6.10 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, and topography.

6.11 Results: Critical Levels

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

The Scenario 1 (i.e. existing) dispersion modelling results against critical levels. The critical level at all of the ancient woodland sites is 3µg/m3 according to the NRW ammonia sensitivity maps. The existing impacts from the free-range layer operation are above 1% of the critical level at all sites and above 100% at the adjacent ancient woodland, at 426.4% of the critical level as an average across that site.

The Scenario 2 (i.e. proposed development). The existing impacts from the proposed broiler operation are above 1% of the critical level at all sites but below 100% at the adjacent ancient woodland, at 97.8% of the critical level as an average across that site.

A comparison of the existing and proposed site impacts has been carried out which shows a betterment at all of the ancient woodland sites including a significant improvement at Park Wood and the adjacent woodland.

6.12 Results: N Nitrogen Critical Load

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

Ancient woodlands do not have an APIS site specific critical load attributed to them in the same way as a European site or SSSI would have. For purposes of the comparison a Nutrient Nitrogen critical load of 10-20 kg N/ha/year has been used, which is consistent with the ranges for all Broadleaved, Mixed and Yew Woodland types:

- Broadleaved deciduous woodland: 10-20 kg N/ha/year;
- Fagus woodland: 10-20 kg N/ha/year;
- Acidophilous Quercus-dominated woodland: 10-15 kg N/ha/year; and
- Meso- and eutrophic Quercus woodland: 15-20 kg N/ha/year.

Scenario 1: The existing impacts from the free-range layer operation are above 1% of the critical load at all sites and above 100% at the adjacent ancient woodland, at 997.7% and 426.4% of the lower and upper critical load as an average across that site, respectively.

Scenario 2: The existing impacts from the proposed broiler operation are above 1% of the critical load at all sites and above 100% at the adjacent ancient woodland, at 997.7% and 426.4% of the lower and upper critical load as an average across that site, respectively.

A comparison of the existing and proposed site impacts has been carried out which shows a betterment at all of the ancient woodland sites, including a significant improvement at Park Wood (ER1) and the adjacent woodland.

It must also be remembered that the result above only relate to deposition of N nitrogen from the air. In reality additional benefits would be realised when birds are prevented from ranging in the adjacent ancient woodland.

6.13 Results: N Deposition

• The highest PC impact at the Mongomery Canal SAC is between 1 and 8%;

• The highest PC impact at the Caeau Glyn SSSI is above 8%;

• The highest PC impact at the Coed Byrwydd SSSI is between 1% and 8%;

• The highest PC impacts at the local sites and ancient woodland are below 100% and are therefore insignificant in all cases.

APIS indicates that the ammonia background N deposition at the site (OS GR 317125, 302730) is:

• Woodland: 28.28 Kg N/ha/year; and

• Grassland: 17.08 Kg N/ha/year.

The background N deposition at all sites (irrespective of the impacts from the proposed development) is therefore above the lower N critical load at these sites.

6.14 Ammonia Conclusions

The ammonia assessment indicates that:

The total mass emission of ammonia is predicted to be 19% lower for the proposed broiler farm than for the existing layer farm when using SCAIL factors. It should also be noted that this is based on there being 32,000 laying birds, however there is a permit in place for 64,000 laying birds.

The existing ammonia impacts from the free-range layer operation are above 1% of the critical level at all sites and above 100% at the adjacent ancient woodland, at 426.4% of the critical level as an average across that site.

The existing impacts from the free-range layer operation are above 1% of the critical load at all sites and above 100% at the adjacent ancient woodland, at 997.7% and 426.4% of the lower and upper critical load as an average across that site, respectively.

The proposed broiler unit will reduce these impacts. The proposed development is therefore regarded as a significant improvement in air quality terms at ecological receptor locations;

On the basis of the reductions afforded by the proposed scheme over the existing layout, the ammonia / N nitrogen emissions should not be regarded as a development constraint in this case, indeed they are a significant benefit. This is particularly the case when also considering the direct deposition of nitrogen by birds using the existing ranging area.

The most similar recent application within the Powys Council area was Application Reference 19/0710/FUL. This application was approved on 6th March 2020 and

showed a betterment in relation to the existing situation at that site. The Argoed Farm proposals are similar to those for that scheme and the benefits are comparable. For this reason the Argoed Farm proposals should also be regarded as positive in relation to ammonia and nutrient nitrogen impacts when compared with the existing 32,000 bird layer operation at the farm.

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 from the farm AD unit 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 and Visual Impact Assessment

7.1 Introduction and Assessment Overview

A Landscape and Visual Impact Assessment (LVIA) has been carried out by Lingard Farrow Styles to identify potential landscape and visual effects, and their likely significance in relation to the proposed extension to the poultry unit.

The Study Area for the LVIA extends to 2km from the Site boundary and has been informed by a Zone of Theoretical Visibility for the proposed development and a visit to the site and surrounding area in June 2020.

7.2 Assessment Criteria

The LVIA has been informed by the Guidelines for Landscape and Visual Impact Assessment Third Edition, Landscape Institute and Institute of Environmental Management & Assessment (2013). LVIA is a tool used to identify and access the significance of and the effects of change resulting from development on both the landscape as an environmental resource in its own right and on people's views and visual amenity.

1. Assessment of landscape effects – assessing effects on the landscape as a resource in its own right.

2. Assessment of visual effects – assessing effects on specific views and on the general visual amenity experienced by people.

It is important to note that LVIAs contain objective information and subjective judgements based on professional opinion. Subjectivity is avoided as much as possible by focusing on the objective description of the changes to views, rather than potential viewers reactions to these changes.

The full methodology for the LVIA can be seen in the LVIA prepared by Lingard Farrow Styles and has been summarised below.

Landscape Assessment

The susceptibility to change of landscape receptors describes the landscape's ability to maintain its baseline condition while accommodating development. The susceptibility of a landscape to development is recorded on a verbal scale of high, medium to low.

The Value of the landscape considers the importance of that landscape to society. Landscape designations are considered as a starting point, but individual elements may also be considered, such as geological formations or tree planting. Landscape value can be high, medium or low.

Landscape susceptibility and value are combined to identify landscape sensitivity as seen in table 1 below:

Table 1

Landscape Value	Susceptibility to Change		
	High	**Medium**	**Low**
High	High	High	Medium
Medium	High	Medium	Low
Low	Medium	Low	Low

The magnitude of landscape effect is an expression of the degree of addition, change or loss which would be experienced by the baseline landscape conditions and is classified as high, medium, low, negligible or no effect. The magnitude of predicted change is a product of the following considerations; scale, duration, permanence, contrast, indirect effects.

The magnitude of landscape effect is an expression of the degree of addition, change or loss which would be experienced by the baseline landscape conditions and is classified as high, medium, low, negligible or no effect. The magnitude of predicted change is a product of the following considerations; scale, duration, permanence, contrast, indirect effects.

Visual Assessment

Visual receptors are always people, but may be classed in different categories dependent upon the activities engaged in at the location where the view is experienced. Susceptibility to change can be categorised as high, medium to low. High category is for viewers principally engaged in activities involving enjoyment of the landscape or for views from residential properties.

The value of a view is closely linked to its susceptibility but the differentiation helps to distinguish between views that may relate to a given receptor, but which might themselves be of a different value. High valued views include those that take in well-known views associated with designated landscapes, public viewpoints, close range views of townscapes, or unrestricted views of the countryside.

Susceptibility and value are combined to identify sensitivity as seen in table 2 below:

Table 2

Value of View	Susceptibility to Change		
	High	**Medium**	**Low**
High	High	High	Medium
Medium	High	Medium	Low
Low	Medium	Low	Low

The magnitude of visual effect is described as high, medium, low, negligible or no effect to take account of possible landscape changes which may effect a visual receptors view. The magnitude of visual effect is described by reference to; scale, contrast, distance, angle, duration.

Determining Significance of Effect

Whether or not an effect is judged to be significant is arrived at by combining the judgement of the sensitivity of a receptor and the judgement of the magnitude of effect. Table 3 below indicates the way in which these judgements are combined to arrive at a nature of effect from which a judgement of whether an effect is significant or not is made.

Table 3

Magnitude	Sensitivity		
	High	**Medium**	**Low**
High	Major	Major-moderate	Moderate
Medium	Major-moderate	Moderate	Slight
Low	Moderate	Slight	Negligible
Negligible	Slight or negligible	negligible	Negligible

Major and Moderate-major effects are considered most likely to be regarded as significant. Where the nature of effect is greater than negligible a judgement as to whether it is likely to be adverse or beneficial to the receptor in question is recorded.

It should be noted that the conclusion that some effects may be 'significant' must not be taken to imply that they should warrant refusal of planning permission.

Cumulative Effects

Guidelines set out that cumulative impacts '*result from additional changes to the landscape or visual amenity caused by the proposed development in conjunction with other developments (associated or separate to it), or actions that occurred in the past, present or are likely to occur in the foreseeable future*' (Landscape Institute and IEMA, 2002: 85). The assessment needs to be kept in proportion to

the nature of the project under consideration. The emphasis in EIA is on likely significant effects rather than on comprehensive cataloguing of every conceivable effect that might occur. The mitigation of any significant adverse cumulative landscape and visual effects needs to be considered.

A search of existing and proposed development similar to the proposal is based on aerial photography, planning authority planning application searches and other relevant literature. This search is undertaken within the Study Area and ZTV in order to focus on identifying the most pertinent cumulative effects although more distant developments may be considered where pertinent.

In assessing cumulative landscape effects, a similar approach to the initial project assessment is utilised with a focus on the key characteristics of the landscape in question. This approach considers the susceptibility of receptor, value attached to receptor, scale of cumulative effects identified, extent of area covered by the cumulative landscape effects, and the duration and reversibility of cumulative landscape

Types of cumulative visual effects considered include 'Combined' effects, where the observer is able to see two or more developments from one view point (either in combination or in succession) or 'Sequential' effects where the observer has to move to a different viewpoint to see different developments (either frequently sequential or occasionally sequential).

7.3 Site and Study Area

The extent of the study area has been informed by a Zone of Theoretical Visibility (ZTV) for the proposed development, topography, the location of Registered Landscapes of Special Historic Interest, and a visit toe the site and surroundings in June 2020.

A full description of the site and study area can be seen in the LVIA and summarised below.

The site occupies parts of two improved grassland fields separated by a species-poor hedge. The is an existing poultry unit aligned east-west in the southern part of the site. The existing unit is of a dark green colour and has a maximum ridge height of 5.3m, length of 142m and width of 21m and an associated area of hard standing, access track and 4 feed bins along its southern side. Within the Site is an electricity H-pylon, the hedgerow that divides the two fields and a line of recently planted birch trees. The field north of the Site includes an area of recently planted trees. The existing poultry unit is located on a flat area at around 170m AOD. To the north of this is a bank which rises to approximately 175m AOD. The fields then rise towards the northern edge of the site. Further north beyond the site the landform

continues to rise to around 205m AOD before dipping slightly to a minor road. Immediately to the south the landform descends towards the Afon Trannon with the slope featuring an area of mature oak woodland. The main farm buildings are around 150 metres to the east and AD unit to the south.

The site is located on the north side of the Trannon Valley and the Afon Trannon flows from wets to east through the study area. The landform around the valley is steeply undulating in places and the slopes cut by small stream valleys. The principal land use in the study area is agricultural with mostly medium sized fields with hedgerow boundaries. Trees are a notable feature with copses, woods, plantations, individual trees and tree lined watercourses.

The principal settlement in the study area if the large village of Trefeglwys to the west. Settlement is otherwise mostly limited to isolated properties and farmsteads. The principal road through the study area is the B4569. Argoed Farm is located off a minor road that runs parallel to the B4569. There is a network of Public Rights of Way (PRoWs) in the area with two passing through or adjacent to the site boundary:

- 257/62/2 which passes through the south-western corner of the site and through the mature woodland to the south of the site. This PRoW continues to the west through Argoed Farm as 257/64/1
- 257/63/1 which passes adjacent to the north-eastern corner of the site continuing south-east (downhill) to connect with 257/62/2 and north-west (uphill) to connect to 257/60/2 and 257/60/1 which connect to minor roads to the their east and west.

7.4 Landscape Designations

Registered Landscapes of Historic Interest have been identified within the study area. These are non-statutory designations to recognise the value of the historic landscape and raise awareness of their importance.

The Caersws Basin Registered Landscape of Historic Interest extends into the eastern edge of the study area and is a minimum separation distance of around 1.3km from the site.

Clywedog Valley Registered Landscape of Historic Interest extends into the south-western edge of the study area with a minimum separation distance of 2.9km from the site.

7.5 Landscape Character

LANDMAP is the formally adopted five-tired landscape classification system developed by the Countryside Council for Wales (now Natural Resources Wales) and

forms the basis of the landscape evaluation for the LVIA. This is described in the LVIA at ***Appendix 3***.

The overall evaluation used by LANDMAP is:

- **Low** – of little or no importance
- **Moderate** – of some local importance
- **High** – of regional or county importance
- **Outstanding** – of national or international importance

Visual and Sensory Aspect Areas (VSAAs)

LANDMAP ID	LANDMAP Area Name	Scenic Quality	Character Evaluation	Overall Evaluation
MNTGMVS695	Trannon Uplands Bryn Crugog	High	Moderate	Moderate
MNTGMVS865	Caersws River Bowl	Moderate	Moderate	Moderate
MNTGMVS758	Trefeglwys	Moderate	Moderate	Moderate
MNTGMVS227	Cefn Carnedd Wooded Hillside	High	High	Moderate
MNTGMVS420	Upper Severn Valley	High	High	High
MNTGMVS204	Llanidloes Farmland	Moderate	High	Moderate

The Trannon Uplands Bryn Crugog contains the site. The summary description is *an area spreading over the gently rolling hill and scarp slopes that form the upper reaches and valley sides of the Trannon valley complex. The aspect contains an intimate and small scale field pattern with a rich patchwork of mixed vegetation cover and well defined hedgerow with hedgerow trees. Small incidental parcels of mixed woodland are also present. Domestic in settlement scale with a scattered rural farmstead pattern and well maintained marginal farming landscape. Field pattern is typified by overgrown hedgerows and wire fences and containing a proportion of bracken and gorse scrub. The area is predominantly southerly facing and has clear views available from within the dense field pattern over the surrounding valley bottoms. A number of small winding stream valleys and networks of narrow twisting lanes typify the area, many of which have a strongly vegetated course and in the case of the stream courses often run through the incidental woodland parcels. There is a strong physical and visual contrast between the lower*

lying and winding lanes and the upper reaches of open marginal farmland. Good long distance views from the upper reaches of the aspect area with clear and open views to the south and east. Views on the plateau edge are drawn towards the movement of the wind turbines on the Trannon Moors.

Summary descriptions of the further VSAA can be seen in the LVIA at ***Appendix 4***.

Cultural Landscape Aspect Areas (CLAAs)

LANDMAP ID	LANDMAP Area Name	Sense of place/local distinctiveness (CLS8)	Character (CSL13)
MNTGMCLS100	Trannon Uplands Bryn Crugog	Moderate	Moderate
MNTGMCLS130	Caersws River Bowl	Strong	Moderate
MNTGMCLS116	Trefeglwys	Moderate	Moderate
MNTGMCLS016	Cefn Carnedd Wooded Hillside	Moderate	High
MNTGMCLS048	Upper Severn Valley	Moderate	High
MNTGMCLS012	Llanidloes Farmland	Moderate	High

The site is located with the Trannon Uplands Bryn Crugog CLAA

Historic Landscape Aspect Areas (HLAAs)

LANDMAP ID	LANDMAP Area Name	Overall Evaluation
MNTGMHL902	Caersws Basin	Outstanding
MNTGMHL970	Gelli Hill	High
MNTGMHL637	Upper Trannon	Moderate
MNTGMHL952	Lower Clywedog/Upper Severn	High
MNTGMHL152	Mynydd Garth-pwt	Moderate

MNTGMHL704	Trannon Moor	High

The site is located within the Caersws Basin HLAA: *Regular lowland fieldscapes of medieval to 18th and 19th-century origin on the floor and floodplain at the confluence of the Severn, Ceirist (Trannon) and Garno rivers around Caersws and including the small nucleated church settlements of medieval origin at Trefeglwys and Llandinam. The village of Caersws lies at the hub of a network of Roman roads to the north, south, east and west which cross the area. Early land use and settlement is suggested by small clusters of Neolithic to Bronze Age burial mounds. Later prehistoric and Roman settlement and land use indicated by dispersed enclosed settlement sites. Dispersed farms and cottages and occasional gentry houses of medieval, late medieval and early post-medieval origin. The course of dismantled 19th-century railway lines westwards to the Van lead mines and southwards to Llanidloes and Rhayader cross the area.*

Further summary descriptions can be seen in the LVIA.

Geological Landscape Aspect Areas (GLAAs)

The site is located within the following GLAA which is described below:

MNTGMGL466 – Waun Garno

'*Includes well developed lobate landforms in probable head deposits in the Esgair Draen Llyn area of potential pRIGS status'*.

Rarity (GL31): High
Overall Evaluation (GL33): High

Landscape Habitats Aspect Areas (LHAAs)

The site is located within the following GLAA which is described below:

MNTGMLH088 *'This area has small improved grass fields which are mainly bounded by hedges there are also several scattered blocks of woodland together with some important local BAP species recorded gives a local significance and moderate evaluation to this area'*.

7.6 ZTV Visual Baseline and Visual Receptors

Zone of Theoretical Visibility (ZTV)

The ZTV shows that the theoretical views to the structure of the proposed development are moderately extensive within the Study Area. However, a visit to the Study Area (June 2020) indicated that readily identifiable views to the proposed development are likely to be only available parts of the ZTV. This is due to screening by the existing woodland alongside the site's boundary, the existing poultry unit and the level of tree and hedge cover across much of the Study Area.

Viewpoints

During the LVIA site visit a photographic was made of 11 viewpoints selected to represent a range of receptors, angles and distances to the site. The locations of the viewpoints are summarised below. Full descriptions of the viewpoints and the existing views can be seen in the LVIA at ***Appendix 3***.

- Viewpoint 01 – Access Road to Argoed Farm
- Viewpoint 02 – B4569 north of Trefeglwys
- Viewpoint 03 – PRoW near Bodaioch Hall
- Viewpoint 04 – PRoW north of Red House
- Viewpoint 05 – Gateway east of Red House
- Viewpoint 06 – Bridleway at Pen y Coed
- Viewpoint 7 – Bridleway near Cwm y Gath
- Viewpoint 8 – Gateway off Stokes Lane
- Viewpoint 9 – B4569 south of Trefeglwys
- Viewpoint 10 – Minor road on hillside south-west of Trefegwys
- Viewpoint 11 – Minor road near Nantgelynen Fach

The LVIA sets out in detail the landscape and visual receptors that have been taken forward to the assessment stage. These have been assessed below.

7.6 Construction and Operational Impacts

The LVIA at ***Appendix 3*** fully describes the existing poultry site and the proposed development focusing on elements of the site which could have an impact on landscape or visual impact. This has been used to inform the assessment below.

The impacts will be particularly informed by the site layout and levels, and the proposed mitigation plan. This includes around 5600m^2 of tree and shrub belt of minimum 10m width on the western, northern, eastern and south-eastern edges of the Site. This will be a mix of 11 different native tree and shrub species and will connect with the existing young tree and shrub planting north of the Site with the existing mature oak woodland to the south of the Site. The planting mix includes species selected to provide a mix of qualities that include relatively fast growth, dense growth, habitat and food for wildlife (e.g. berried species), longevity, and an

ongoing contribution to local landscape character. Gapping up of existing hedgerows using a mix of 10 different native species and grass seeding as required.

The LVIA confirms that the construction impacts will be short term and temporary.

Operational impacts will result from the proposed development and will include:

- The land-take associated with the development;
- The presence of the proposed structures and surfaces;
- Landform changes resulting from the development, including cut to create the development platform;
- Vehicle movements associated with the ongoing operation of the broiler units as noted in the highways report that accompanies the planning application.
- There will be no flood lighting of the Site; lighting will be restricted to low level-lighting at entrances for safe working.

Cumulative Impacts

Cumulative effects in this assessment are taken to factor in both existing and proposed (within the planning system) poultry/broiler units similar to the proposed development within the Study Area. Cumulative effects are noted in the assessment where pertinent, it should also be noted that the existing free-range poultry unit on the Site is factored in throughout the assessment.

Those poultry/broiler units (existing and proposed) considered as part of the assessment process for cumulative purposes have been identified using aerial photography, OS mapping, a visit to the Study Area (June 2020), a review of Powys planning applications and CPRWs website. Existing/permission granted units similar to the proposed development include:

- Bryn Owen (most recent planning ref: P/2017/0687)
- Fridd-uchaf (outside of Study Area) (most recent planning ref: 18/0430/FUL)
- Glangwden (outside of Study Area) (most recent planning ref: P/2017/0549)

7.7 Landscape Assessment

Landscape Elements

The full tables can be seen in the LVIA report at ***Appendix 3*** and include the full rationale and a narrative of the impact. This has been summarised below.

Vegetation of the site and boundaries

	Level	Rationale summary/narrative summary
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	Vegetation type abundant in surrounding landscape
Value	Medium	No landscape designations or TPOs, local value
Magnitude of landscape effect	Low adverse in year 1 becoming low positive after 5 years	Section of hedge and 6 young birch trees, 200sq.m newly planted trees lost. Direct permanent effect but small in scale and hedges species poor. This loss will be mitigated by the landscaping plan which will increase the number of trees and connectivity.
Nature of effect	**Slight adverse becoming slight beneficial over 5+ years**	
Significance of effect	**Not Significant**	

Landform on which the site is located

	Level	Rationale summary/narrative summary
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	The existing landform is not prominent in the overall landscape
Value	Medium	No landscape designations, local value
Magnitude of landscape effect	Medium adverse	There will be direct and permanent effects on the landform as a result of the development; the proposed development will be cut into the landform. The total area of landform change will be 20,000m^2 Valley slope and small hill top will remain clearly legible within the wider landscape and continue to contribute to landscape character in a recognisably similar manner as the pre-development situation, despite the presence of the development platform.
Nature of effect	**Moderate adverse**	
Significance of effect	**Not significant**	

Landscape Character

LANDMAP Visual and Sensory Aspect Areas (VSAAs)

Trannon Uplands Bryn Crugog

	Level	Rationale summary/narrative summary
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	Proposed development located within the VSAA. Some agricultural and residential development present
Value	Medium	LANDMAP overall evaluation of moderate
Magnitude of landscape effect	Low adverse	Direct and permanent effects. New agricultural element but broadly consistent with the diverse farming landscape. Intensification of land use but adjacent to existing unit and similar in height. Landform to permanently change but only small scale change to the extensive VSAA.

		Development unlikely to affect the attractive views. Landscape mitigation plan to be put in place. Cumulative effects will be negligible.
Nature of effect	**Slight adverse**	
Significance of effect	**Not significant**	

Caersws River Bowl

	Level	**Rationale summary/narrative summary**
Sensitivity	Low	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located in VSAA and at separation distance of 60m separated by mature wioodland
Value	Medium	LANDMAP overall evaluation of moderate
Magnitude of landscape effect	Negligible	No direct effects on VSAA or the key characteristics. For VSSA as a whole attractive views unlikely to be notably affected. No notable cumulative effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not Significant**	

Trefeglwys

	Level	**Rationale summary/narrative summary**
Sensitivity	Low	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the VSAA and will be at a minimum separation distance of 1.5km.
Value	Medium	LANDMAP overall evaluation of medium
Magnitude of landscape effect	Negligible	No direct effects on VSAA or the key characteristics. Very limited views and where visible unlikely to notably effect the characteristic of the VSAA. No notable cumulative landscape effect likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Cefn Carnedd Wooded Hillside

	Level	Rationale summary/narrative summary
Sensitivity	Low	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the VSAA and will be at a separation distance of 1.1km
Value	Medium	LANDMAP overall evaluation of moderate
Magnitude of landscape effect	Negligible	No direct effects on VSAA or the key characteristics. Unlikely to affect attractive views which already feature multiple agricultural units. No notable cumulative effects likely.
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Upper Severn Valley

	Level	Rationale summary/narrative summary
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the VSAA and will be at a separation distance of 1.7km
Value	High	LANDMAP overall evaluation of high
Magnitude of landscape effect	Negligible	No direct effects on VSAA or the key characteristics. . Unlikely to affect attractive views. No notable cumulative effects likely.
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Llanidloes Farmland

	Level	Rationale summary/narrative summary
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the VSAA and will be at a separation distance of 2.7km
Value	Medium	LANDMAP overall evaluation of medium

Magnitude of landscape effect	Negligible	No direct effects on VSAA or the key characteristics. . Unlikely to notably affect views. No notable cumulative effects likely.
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

LANDMAP Cultural Landscape Aspect Areas (CLAAs)

Trannon Uplands Bryn Crugog

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	Proposed development located within the CLAA. Sense of place/local distinctiveness moderate. The CLAA covers 17.8km
Value	Medium	LANDMAP character moderate
Magnitude of landscape effect	Low adverse	Direct and permanent effects. New agricultural element but broadly in keeping with the agricultural culture of the CLAA. Intensification of land use but adjacent to existing unit and similar land use to existing chicken unit. Proposed development considered a continuation of the evolution of the cultural landscape. Cumulative effects are likely to be negligible
Nature of effect	**Slight adverse**	
Significance of effect	**Not significant**	

Caersws River Bowl

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development located within the CLAA and separation distance of 60m. Sense of place/local distinctiveness strong. The CLAA covers 39.7km
Value	High	LANDMAP character strong

Magnitude of landscape effect	Negligible	No direct effects. Unlikely to notable effect any key characteristics. The location of the proposed development on the lower parts of the valley side above the CLSAA has strong cultural context provided by the presence of farmsteads and other agricultural units in similar positions. No notable cumulative landscape effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Trefeglwys

	Level	**Rationale summary/narrative summary**
Sensitivity	Low	Susceptibility x Value
Susceptibility to change	Low	Proposed development located within the CLAA and separation distance of 1.5km. Sense of place/local distinctiveness moderate.
Value	Medium	LANDMAP character moderate
Magnitude of landscape effect	Negligible	No direct effects. Unlikely to notable effect any key characteristics. The location of the proposed development on the lower parts of the valley side above the CLSAA has strong cultural context provided by the presence of farmsteads and other agricultural units in similar positions. No notable cumulative landscape effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Cefn Carnedd Wooded Hillside

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development located within the CLAA and separation distance of 1.1km. Sense of place/local distinctiveness moderate.

Value	High	LANDMAP character high
Magnitude of landscape effect	Negligible	No direct effects. Unlikely to notable effect any key characteristics. The location of the proposed development on the lower parts of the valley side above the CLSAA has strong cultural context provided by the presence of farmsteads and other agricultural units in similar positions. No notable cumulative landscape effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Upper Severn Valley

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development located within the CLAA and separation distance of 1.7km. Sense of place/local distinctiveness moderate.
Value	High	LANDMAP character high
Magnitude of landscape effect	Negligible	No direct effects. Unlikely to notable effect any key characteristics. Unlikely to notably effect views or key characteristics of the CLSAA No notable cumulative landscape effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Llanidloes Farmland

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development located within the CLAA and separation distance of 2.7km. Sense of place/local distinctiveness moderate.
Value	High	LANDMAP character high

Magnitude of landscape effect	Negligible	No direct effects. Unlikely to notable effect any key characteristics. Unlikely to notably affect views out of the CLSAA No notable cumulative landscape effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

LANDMAP Historic Landscape Aspect Areas (HLAAs)

Caersws Basin

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	Medium	Proposed development located within the HLAA. Relatively modern agricultural development in the HLAA. Closest scheduled monument at separation distance of 1.5m. The HLAA is extensive
Value	High	LANDMAP overall evaluation of outstanding
Magnitude of landscape effect	Low	Direct permanent effects. New agricultural element but located next to existing poultry unit and development may be considered a modern continuation of later agriculture. Changes to landform are unlikely to notably affect the legibility of the historic landscape. Unlikely to be notable cumulative effects.
Nature of effect	**Moderate adverse**	
Significance of effect	**Not significant**	

Gelli Hill

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the HLAA and separation distance of 1.2km.

Value	High	LANDMAP overall evaluation of moderate
Magnitude of landscape effect	Negligible	No direct effects on HLAA or the key characteristics. Unlikely to notably affect the legibility of the historic landscape or notably affect the setting of the hillfort. Notable cumulative effects unlikely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Upper Trannon

	Level	**Rationale summary/narrative summary**
Sensitivity	Low	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the HLAA and separation distance of 120m
Value	Medium	LANDMAP overall evaluation of moderate
Magnitude of landscape effect	Negligible	No direct effects on HLAA or the key characteristics. In addition to the separation distance, the proposed development is located at similar elevation to other farmsteads and agricultural buildings and is unlikely to notably affect the legibility of the historic landscape in views from the HLAA. Cumulative landscape effects are likely to be negligible
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Lower Clywedog/Upper Severn

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the HLAA and separation distance of 2.4km
Value	High	LANDMAP overall evaluation of outstanding

Magnitude of landscape effect	Negligible	No direct effects on HLAA or the key characteristics. Separation distance, combined with the proposed development's position relatively low on a valley side and closely associated with existing similar development means the proposed development is unlikely to affect the legibility of the historic landscape surrounding the HLAA. Notable cumulative effects unlikely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

LANDMAP Geographical Landscape Aspect Areas

Waun Garno

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	Proposed development located within the GLAA. The GLAA is extensive
Value	High	LANDMAP overall evaluation of high
Magnitude of landscape effect	Low	Direct permanent effects due to excavations required for the development platforms however unlikely that notable geological or geomorphological features will be lost
Nature of effect	**Slight adverse**	
Significance of effect	**Not significant**	

LANDMAP Landscape Habitats Aspect Areas

MNTGMLH088

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value

Susceptibility to change	Medium	Proposed development located within the LHAA on abundant improved grassland adjacent to existing poultry unit
Value	Medium	LANDMAP overall evaluation of moderate
Magnitude of landscape effect	Low Adverse becoming Low Positive	Loss of an area of improved grassland but abundant in the LHAA and loss of young trees. Landscape mitigation scheme will however increase the number and diversity of trees and shrubs and connectivity
Nature of effect	**Slight adverse becoming slight beneficial after 5 years**	
Significance of effect	**Not significant**	

7.8 Landscape Designations

Caersws Basin Registered Landscape of Historic Interest

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the registered landscape at minimum 1.3km distance
Value	High	National landscape designation
Magnitude of landscape effect	Negligible	No direct effects on Registered Landscape The proposed development is unlikely to notably affect the Registered Landscape of Historic Interest or Hillfort, or their setting. Notable cumulative effects are unlikely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Clywedog Valley Registered Landscape of Historic Interest

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Low	Proposed development not located within the registered landscape at minimum 2.9km distance
Value	High	National landscape designation

Magnitude of landscape effect	Negligible	No direct effects on Registered Landscape The proposed development is unlikely to notably affect the Registered Landscape of Historic Interest or their setting. Notable cumulative effects are unlikely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

7.9 Assessment of Potential Visual Impacts

Users of PRoWs 257/62/2 which pass through the south-western corner of the Site and connecting PRoW 257/64/1

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Walkers likely to be engaged in landscape appreciation
Value	Medium	PRoW marked on OS mapping
Magnitude of landscape effect	Low adverse becoming negligible	Walkers heading east may glimpse upper parts of development for less than 100m. The development would appear alongside the existing poultry unit and would appear as part of the existing farm. Cumulative effects unlikely to be significant. Some parts of path offer close distance views but the existing buildings provide strong context. No impact on any panoramic or long distance views. As mitigation planting establishes it is likely to partially screen or filter views the proposed development such that the new development may contribute a negligible visual effect. No notable cumulative effects likely
Nature of effect	**Moderate adverse reducing slight over 5+ years**	
Significance of effect	**Not significant**	

Users of 257/63/1 which passes adjacent to the north-eastern corner of the Site

	Level	Rationale summary/narrative summary
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Walkers likely to be engaged in landscape appreciation
Value	Medium	PRoW marked on OS mapping
Magnitude of landscape effect	Low adverse becoming negligible	Walkers heading south-east through the field immediately west of the site have some close distance views but the existing poultry unit provides strong context Native screen planting (see mitigation planting plan 3052-001) alongside the site's northern and eastern boundaries will serve to screen views to the proposed units after it establishes, such that the proposed units may be missed by the casual observer. No notable cumulative effects are likely.
Nature of effect	**Moderate adverse reducing to negligible over 3+ years**	
Significance of effect	**Not significant**	

Users of PRoWs in bottom of Trannon Valley (Viewpoints 3 and 4)

	Level	Rationale summary/narrative summary
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Walkers likely to be actively engaged in landscape appreciation
Value	Medium	PRoW marked on OS mapping
Magnitude of landscape effect	Up to negligible reducing further over 5+ years	Walkers using these valley-bottom PRoWs will obtain some partial glimpse views to the upper parts of the proposed development in places, such as at viewpoints 3 and 4. Site sits low on valley side such that it may be screened by trees and hedges within the valley bottom. Screening form mature woodland. The site's location appears low on the slopes that form the edge of the valley and additional context is provide by other agricultural development, such as agricultural units at Penrhos (above Argoed Farm) which is higher on the valley slopes than the proposed

		development. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes, reducing visual effects. No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse** reducing to **negligible** over 5+ years	
Significance of effect	**Not significant**	

Users of PRoWs on southern slopes of Trannon Valley (viewpoints 6 and 7)

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Walkers likely to be engaged in landscape appreciation
Value	Medium	PRoW marked on OS mapping
Magnitude of landscape effect	Up to low adverse becoming negligible	A number of elevated paths offer long distant panoramic views in the direction of the site. The site sits low on the opposing valley side appearing as part of a background that features several farmsteads and agricultural buildings. Where visible the development will be partly screened and the existing poultry unit provides strong context. The regraded landform is unlikely to be readily discerned. Mitigation will reduce visual effects.
Nature of effect	**Up to Moderate adverse becoming Slight adverse over 5+ years**	
Significance of effect	**Not significant**	

Users of PRoWs on higher ground in NW of Study Area

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Walkers likely to be engaged in landscape appreciation
Value	Medium	PRoW marked on OS mapping
Magnitude of landscape effect	Up to negligible reducing	This area features numerous well-treed hedgerows and belts of trees on an undulating slope meaning views in the direction of the site are mostly well screened

	further over 5+ years	Where available, the partial glimpses are unlikely to notably affect long distance or panoramic views from PRoWs in this area. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes, reducing visual effects. No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse reducing to negligible over 5+ years**	
Significance of effect	**Not significant**	

Users of PRoWs on higher ground in SW of Study Area (Viewpoint 10)

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Walkers likely to be engaged in landscape appreciation
Value	Medium	PRoW marked on OS mapping
Magnitude of landscape effect	Up to negligible reducing further over 5+ years	The roofs and upper gable-ends of the proposed development may be partially glimpsed beyond the existing poultry unit which will otherwise screen the remainder of the development and provide strong context for it. The separation distance is such that any changes may be missed by the casual observer. The regraded landform is unlikely to be readily discerned once re-vegetated, and the retaining wall would be mostly screened by the units and at such a distance such that it may be missed by the casual observer. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes. No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse reducing to negligible over 5+ years**	
Significance of effect	**Not significant**	

Residents of Llys Trannon

	Level	Rationale summary/narrative summary
Sensitivity	High	Susceptibility x Value
Susceptibility to change	Medium	Views in direction of site unlikely from main living spaces
Value	High	Residents likely to highly value views from property
Magnitude of landscape effect	Low becoming negligible over 5+ years	Likely that residents will obtain glimpse views to the upper parts of roofs of the proposed development, appearing in conjunction with the existing unit. Existing buildings at Argoed provide strong context for the proposed development. The proposed units will be of a similar form, height and colour to the existing poultry unit and their low profile will help minimise the visual effect. As mitigation planting establishes it is likely to further screen or filter views to the proposed development such that the new development may contribute a negligible visual effect. No notable cumulative effects are likely.
Nature of effect	**Moderate adverse reducing to Slight adverse over 5+ years**	
Significance of effect	**Not significant**	

Residents of Trefeglwys

	Level	Rationale summary/narrative summary
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Views in direction of site likely from main living spaces
Value	High	Residents likely to highly value elevated views
Magnitude of landscape effect	Up to negligible further reducing over 5+ years	Some residents may obtain partial glimpses above the trees to the roof and upper gable ends of the proposed units. However, given the separation distance, their low profile, their position relatively low on the valley side and their colouration, these may be missed by the casual observer. The regraded landform is unlikely to be discerned once revegetated.

		Strong context provided by other agricultural development and the site is low on the slopes. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes, reducing visual effects. No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse reducing to negligible over 5+ years**	
Significance of effect	**Not significant**	

Residents on southern slopes of Trannon Valley

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Views in direction of site likely from main living spaces
Value	High	Residents likely to highly value elevated views
Magnitude of landscape effect	Up to low becoming negligible over 5+ years	Some properties offer views across the valley. Where visible the development will be mostly screened by the existing poultry unit and mature woodland due to the low profile of the buildings. Views will be to the upper parts of the roofs and feed bins. The existing poultry unit provides strong context. The regraded landform is unlikely to be discerned once revegetated. Strong context provided by other agricultural development and the site is low on the slopes. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes, reducing visual effects. No notable cumulative effects are likely.
Nature of effect	**Up to Moderate adverse reducing to Slight adverse over 5+ years**	
Significance of effect	**Not significant**	

Residents in bottom of Trannon Valley

	Level	**Rationale summary/narrative summary**

Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Views in direction of site likely from main living spaces
Value	High	Residents likely to highly value elevated views
Magnitude of landscape effect	Up to negligible further reducing over 5+ years	Some properties may offer views in the direction of the site. There may be partial glimpses in some places above intervening trees and hedges from upper windows. In these views the existing poultry unit and mature woodland will almost entirely screen the proposed units. The regraded landform is unlikely to be discerned once revegetated. Strong context provided by other agricultural development and the site is low on the slopes. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes, reducing visual effects. No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse reducing to negligible over 5+ years**	
Significance of effect	**Not significant**	

Residents on higher ground in NW of study area

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Views in direction of site likely from main living spaces
Value	High	Residents likely to highly value elevated views
Magnitude of landscape effect	Up to negligible reducing further over 5+ years	Existing vegetation means that views in the direction of the site are mostly well screened. Where views are available they are likely to be from upper windows and limited to partial glimpses to the upper parts of the roofs and feed bins but will appear in conjunction with the existing poultry unit. Unlikely to affect long distance views Mitigation planting will increase the level of screening of the existing and proposed units as it

		establishes, reducing visual effects.No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse reducing to negligible over 5+ years**	
Significance of effect	**Not significant**	

Residents on higher ground in the SW of Study Area

	Level	**Rationale summary/narrative summary**
Sensitivity	High	Susceptibility x Value
Susceptibility to change	High	Views in direction of site likely from main living spaces
Value	High	Residents likely to highly value elevated views
Magnitude of landscape effect	Up to negligible further reducing over 5+ years	The roofs and upper gable-ends of the proposed development may be partially glimpsed beyond the existing poultry unit which will otherwise screen the remainder of the development and provide strong context for it. The regraded landform is unlikely to be discerned once revegetated. Context provided by other agricultural development and the site is low on the slopes. Mitigation planting will increase the level of screening of the existing and proposed units as it establishes, reducing visual effects.No notable cumulative effects are likely.
Nature of effect	**Up to Slight adverse reducing to negligible over 5+ years**	
Significance of effect	**Not significant**	

Users of B4569

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	Road users may occasionally appreciate the landscape but roadside hedges screen the majority of views.
Value	Medium	Glimpses to countryside in places.

Magnitude of landscape effect	Negligible	Transient glimpses may be obtained through gaps in the hedges although likely to be missed by users of the B4569. No notable cumulative effects are likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

Users of minor roads in Trannon Valley and on slopes of Trannon Valley

	Level	**Rationale summary/narrative summary**
Sensitivity	Medium	Susceptibility x Value
Susceptibility to change	Medium	Road users may occasionally appreciate the landscape but roadside hedges screen the majority of views.
Value	Medium	Glimpses to countryside in places.
Magnitude of landscape effect	Negligible	Transient glimpses may be obtained through gaps in the hedges partial views of upper parts of proposed development. Screening provided by existing poultry unit and woodland. Users of minor roads are likely to miss proposed development due to the transient and partial nature of any views, the angle of views relative to the direction of travel and the separation distances to the proposed development. For those users on foot, refer to the assessment for users of Public Rights of Way in these areas. No notable cumulative effects likely
Nature of effect	**Negligible**	
Significance of effect	**Not significant**	

7.10 Conclusions

Landscape Effects

The proposed development will have **no significant effects** on any of the landscape elements, landscape character or landscape designations assessed.

Visual Effects

The proposed development will have **no significant effects** on any of the visual receptors assessed.

Overall Conclusion

No significant landscape or visual effects have been identified. The proposed mitigation planting plays a notable role in further reducing a number of landscape and visual effects.

The proposed development is considered acceptable in terms of its likely landscape and visual effects.

8. Historic Environment

8.1 Introduction

A Heritage Impact Assessment has been prepared in accordance with paragraph 6.5.6 of Planning Policy Wales and the duty of those involved in the process of change to heritage assets to fully understand the significance of the affected assets. The HIA looks to assess the heritage value of existing buildings and the potential impact of these proposals on the significance of buildings and on any other designated and non-designated heritage assets nearby.

8.2 Historic Environment Record (HER)

The HER has been consulted and used to inform the Heritage Impact Assessment.

8.3 Methodology

Planning Policy outlines the need to inform the planning decisions that need to be made when considering proposals that have the potential to have some impact on the character or setting of a heritage asset. The HIA is not concerned with other planning issues. It is necessary to assess the significance of the designated and non-designated heritage assets involved, to understand the nature and extent of the proposed developments, and make an objective judgement on the impact that proposals may have.

The degree of impact a proposed development could have on such assets is variable and can sometimes be positive rather than negative. The wide range of possible impacts can include loss of historic fabric, loss of historic character, damage to historic setting, and damage to significant views. The HIA will assess whether the proposed development will have any impact on the setting of heritage assets and if so, the degree of such impact. The HIA includes a definition of setting.

The HIA considers the setting and history of the site and surrounds, before carrying out a Heritage Impact Assessment including:

- Impact on designated heritage assets in the study area
- Impact on designated heritage assets adjacent to the study area (including ancient scheduled monuments and the AONB)
- Impact on non-designated heritage assets in the study area
- Impact on non-designated heritage assets adjacent to the study area

Cadw guidance Conservation Principals for the Sustainable Management of the Historic Environment in Wales sets of the component values that need to be considered in order to assess the significance of a heritage asset. When assessing an asset for the purpose of a Heritage Impact Assessment, the Casw conservation principles and values should be considered and addressed.

Ultimately, TAN 24 places the final decision on how a proposal will affect the setting heritage asset on the LPA:

'The local planning authority will need to make its own assessment of the impact within the setting of a historic asset, having considered the responses received from consultees as part of this process. A judgement has to be made by the consenting authority, on a case-by-case basis, over whether a proposed development may be damaging to the setting of the historic asset, or may enhance or have a neutral impact on the setting by the removal of existing inappropriate development or land use.'

The HIA considers the level of magnitude of any impact on the character, setting, or significance of designated or non-designated heritage assets. Further details regarding methodology and desktop research can be seen in the HIA at ***Appendix 4***.

8.4 Identifying Heritage Assets

The HIA has identified a study area of 1km radius from the site. This is considered appropriate with regard to the scale of the proposals to highlight any historic assets of importance that may be affected by the development.

The site itself has no designated historic assets within the red line boundary although there are several within the 1km study area. The HER does highlight several historic assets courtesy of the Clwyd-Powys Archaeological Trust nearby the site. There are historic assets within the village which were not taken forward for assessment due to their distance from the site.

HER Historic Assets:

HCLA No. 86620 Orchard II – marked on historic maps

HCLA No. 86621 Orchard I – remains of orchard with one surviving tree

HCLA No. 86616 Farmstead – house with possible former farm buildings

HCLA No. 4884 Stable – rubble stone slate roof stable late 18th/early 19th century

HCLA No. 86619 Well – natural spring with hollow cut into slope

HCLA No. 86617 Well – marked on historic maps

HCLA No. 20488 Penhros House – 3 half-timbered buildings: cruck-framed hall house; box-framed building; third replaced by modern dwelling.

8.5 Historical & Character Appraisal

Cartographic evidence shows the site to have had no development until the late 20th/early 21st century when the farmstead developed significantly. Argoed farmstead itself has changed dramatically, having a very low survival rate of historic fabric. It has a dispersed typology which is common in more remote hillside farmsteads. The farmhouse has been heavily restored therefore losing some of its heritage value. The rear outbuilding (likely to be the former stable) remains but extensive building work has been carried out. All of the former traditional buildings have been replaced by modern buildings. Generally the layout and field patterns of the farmstead have been retained but the historic assets and fabric of the farmstead have been lost as the farming industry has evolved.

8.6 Setting

Setting is defined in TAN 24 as '*the surroundings in which it us understood, experienced, and appreciated embracing present and past relationships to the surrounding landscape*'

LANDMAP refers to the landscape as having a moderate visual sensory quality. Further detail can be seen in the LVIA.

The HIA has identified two notable historic assets to be considered located outside the farmstead where there is potential harm caused to their setting from the proposed development:

The listed building named as Gwaelod a small farmhouse '*exhibiting the late tradition of timber-framing, retaining its historic character and detail*'. There has been some loss of historic fabric. The building is isolated on the hillside with the principal elevation facing towards the site. Its significance is largely derived from its historic value of the construction method.

There is also a long red-brick barn range that could be considered a historic asset for its historic value, however it is largely obscured by modern metal sheds which are also visible from the site.

Both of the settings have remained relatively unchanged with minimal development within the landscape. Although major development does include a windfarm and modern agricultural buildings on the opposite side of the hillside.

Although there is a tranquil quality, other sensory elements include noise and smell from the multiple agricultural businesses in the area which contribute to the setting of historic assets.

There is no physical or functional relationship between the historic assets south of the site (approx.. 1.3km). The intervisibility between the site and historic assets is not a planned view.

The capability of the landscape to absorb the proposed development can be seen in detail in the LVIA.

8.7 Heritage Impact Assessment

There are very few identified historic assets affected by the proposed development, none of which are directly affected. Only one listed building is within visible range. There is no physical intervention to any of the historic assets or the farmhouse itself.

There are no known archaeological or historic features within 2km of the site.

The layout of the farmstead will essentially remain unchanged and will not compromise the setting of the historic assets.

The site will be terraced to mitigate impact on landscape character and there is a landscape planting mitigation plan.

The development has a neutral impact on the setting to the historic assets.

8.8 Conclusions from Heritage Impact Assessment

Argoed Farm is an example of a traditional farmstead which has seen significant redevelopment and modernisation. It is still a thriving working farm which forms an important part of the landscape and cultural identity of the area.

There are only two historic assets with potential to be affected, one a listed building, and both outside the site. The proposals will be of neutral impact to their agricultural, rural setting, reduced by a mitigation strategy to ensure the development sits sensitively into the existing environment.

8.9 Overall Conclusions

Landscaping will take place which will help to mitigate any impacts on the surroundings. This together with the lie of the land, with the proposed sheds being built into the hillside will reduce the visual impact.

For reasons outlined in the HIA and LVIA, the proposed units will have no impact on the character of the area. Landscaping will take place which will help to mitigate any impacts on the farmhouse or heritage assets. There will therefore be a short term negative impact on these assets of minor significance becoming not significant once the construction work is complete and landscaping has become established.

9. Highways

9.1 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?*

9.2 Highway Technical Note

A Highways Technical Note has been prepared by Berrys and has been included at ***Appendix 5*** of this report.

9.3 Location

The proposed development site is located at Argoed Farm, SY17 5QT, located approximately 2km east of Trefeglwys.

9.4 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.

9.5 Site Access and the Highway Network

The proposed development site is accessed from the internal farm access roads passing through the farm and will utilise the existing egg unit access route. The farm is accessed via the existing tarmac track linking to the C2180 located to the north west of the site. Traffic then travels along the eastern stretch of the C2180, where it links with the B4569 approximately 1.2km to the north east of the site. This access route was improved as part of the existing egg layer unit under the consent reference P2008/1068 and a subsequent amendment P/2010/0380.

The local road improvements provided by the applicant consisted of localised widening and surface improvements to the farm access road, geometry improvements for use by articulated HGVs at the farm access road junction, a series of passing places along the C-class road and geometry and visibility improvements at the junction between the C-class road and the B4569. A total of four passing places were provided along the C-class road, giving total overall road widths of 5.3m to 5.5m to allow passing by slow-moving traffic.

The route leading to Argoed Farm has been improved to provide a tarmac surface with localised widening works carried out to facilitate movements by HGVs. Widths along the route generally range between 3.1m to 6.7m, where widening has been provided on bends to allow two oncoming heavy vehicles to pass.

The farm access junction with the C-class road has been improved to facilitate access by articulated HGVs and allows simultaneous entry and exit at the side road. The corner radii have been improved and the width of the side road tapers down from approximately 9.9m to a single-lane width over a distance of approximately 25m. Visibility from the junction is good in either direction; distances were measured for the Transport Note in full summer hedge growth and 2.4m x 76m is available to the west and to the east visibility is in excess of 150m due to the straight alignment of this approach.

The C-class road leading between the farm access and the B4569 is a rural single lane route with a varying width. It is understood that a routing agreement is in place for the current poultry operations, stating that all traffic must use the eastern leg of the C-class road. It is therefore expected this to be applied to this development, if approved. Forward visibility along the C-class road is generally good, however the single-lane width and presence of side road accesses influence low vehicle speeds despite the de-restricted speed limit; 85%ile speeds are anticipated to be in the region of 30mph. The C-class road forms a ‘bow’ shape with each end linking to the

B4569, with no other connecting routes leading from it. The route principally provides access to a number of farms and a few adjacent dwellings. Consequently, the C-class road is considered to carry only a low number of daily movements.

The B4369 links between the C-class road and the A489 principal road at Caersws, which is located approximately 3km east of C-class road junction. The improvements previously carried out to the B4369 and C-class road junction by the applicant facilitate the movement of heavy vehicles. The approach to the junction has also been widened over a distance of approximately 30m to allow two oncoming heavy vehicles to pass. Forward visibility improvements were also carried out on the northern side of the B4369 to the east of the junction, to improve the inter-visibility between turning and oncoming traffic.

Photographs of the highways improvements can be seen in the Transport Note.

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.

9.6 Development Trip Generation

Trips for the proposed broiler unit development have been derived on a 'first principles' basis from experience of planning broiler unit developments of this type and scale.

The proposed development will principally be operated by the applicant, who lives on the farm. However, for some operations staff will need to travel to the site. By nature, farming operations are located in rural areas not well served by public transport and hence farm workers are normally reliant upon private vehicles for transport. Public transport options do exist in the form of a rail station and bus routes at Caersws 4km east of the site.

The maximum stocking capacity of the existing egg layer unit is 32,000 birds and this generates a number of movements as follows: Eggs are collected from the unit every other day by a three-axle 10m length rigid HGV. A single articulated HGV delivers feed to the site each week. One mortality collection is made each month by a box van 7.5t type vehicle. Two staff work at the unit every day and travel to the farm by private vehicles. Other movements consist of inspections and maintenance visits by light vehicles. The growing cycle for the egg-layer unit operates over an 18-month period, so the arrival chicks and removal of adult birds has been ignored for the purpose of this assessment due to the long time period. For completeness, these movements are presently made by articulated HGVs.

The applicant has an existing on-site AD plant which will be used to dispose of the muck and bedding arising from the poultry units. As some feedstock is presently

imported to the site, this will yield a small reduction in the vehicle movements for the AD process. It is also intended that the AD plant will heat the poultry sheds, but back up gas boilers will also be required.

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

Operation	Vehicle type	Total 2-way movements	When in cycle
Feed delivery	Articulated HGV	6.5	x1 per week
Mortality collection	Rigid HGV	1.5	x1 per month
Egg collection	Rigid HGV	23	Every other day
Manure removal	-	0	Internal
Ongoing maintenance and inspections	Light vehicles	7	Throughout
TOTAL PER CYCLE		**38**	

Table 9.1 Existing poultry unit

The existing egg-layer poultry operates an 18-month cycle time for birds, so given the longer duration of the egg cycle a comparative 46 day period during the cycle midpoint has been taken to provide a traffic movement baseline for comparison against the proposed development. The above baseline therefore excludes the delivery of chicks or the removal of adult birds from the egg-layer unit, in order to provide a robust assessment. When factored up over a year period, the above 38 movement baseline gives an annual total of 302 2-way movements.

Movements associated with the wider farm have been excluded from the above baseline, as these will be unaffected by the proposed development and will therefore remain constant. As a mixed-use farm with arable crops, an AD plant and cattle, there will be seasonal variations in the number of movements onto the surrounding highway network. However, it is estimated that on average the farm is likely to generate between six to ten 2-way movements on the surrounding highway network per day, with short-term seasonal peaks and troughs.

The proposed additional poultry buildings will potentially allow some savings in the number of off-site movements to the AD plant due to the litter providing a greater source of on-site feedstock. This is likely to replace much of the existing permitted 12,500 tonnes of feedstock per annum imported to the site and will lead to a reduction in the number of HGV and tractor and trailer movements on the surrounding network. Based on a tractor trailer having a payload capacity of 15t, this could result in an approximate saving of 830 movements per annum on the network. However, the actual number of movements saved will depend upon a number of factors relating to the yields from other feedstock sources on the farm. The use of spent digestate on the farm as fertiliser will be unaffected by the development, and digestate will continue to be spread on the applicant's land using the internal access routes.

The total movements for the proposed development, including the converted building and three new buildings. These have been based on the proposed site capacity of 220,000 broilers per cycle.

Operation	Vehicle type	Total 2-way movements	When in cycle
Bedding delivery	Articulated HGV	2	Day 46
Chick delivery	Articulated HGV	4	Day 1
Feed delivery	Articulated HGV	27	Throughout
Fuel delivery*	Rigid HGV	2	Days 1, 18
Mortality collection	Box van	6	Throughout
Bird thinning	Articulated HGV	8	Day 30-31

Bird depopulation	Articulated HGV	19	Days 35-36
Manure removal	-	0 INTERNAL	Days 39-41
Ongoing maintenance and inspections	Light vehicles	12	Throughout
TOTAL PER CYCLE		**80**	

Table 9.2 Development trip generation

*Notes: 2-way movements per cycle (2-way means one combined trip to and from the development). *Vehicle movements for fuel delivery included on the basis of backup gas boilers used if AD Plant is out of operation.*

As can be seen in the above table, the overall increase in movements in any one growing cycle period is predicted to rise from 38 to 80 2-way trips, an increase rate of 111% and giving a daily average of 1.7 2-way movements. The proposed development will lead to an annual total of 635 2-way movements on the network.

The peak movements will occur during the bird thinning and depopulation operations, where fully grown broilers are removed from the site. 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 network, although passing places are available within the site access and on the nearby network should the need arise.

9.7 Development Traffic Impact and Mitigation

To accommodate HGV movements associated with the existing poultry unit works have taken place to improve the access to the site. These improvements are detailed in section 9.5 above.

Argoed Farm benefits from having a good level of access with the surrounding road network, which has been recently improved by the applicant for use by HGVs as

part of past planning consents. Consequently, the site is well placed for the network to accommodate the modest increase in traffic movements arising from the proposed development. It is considered that no on or off-site modelling or mitigatory works are justified or required. Also, no highway safety issues are anticipated as a result of the proposed development. Overall, the Transport Note considers that on highway and access grounds the site is a sustainable location to accommodate additional agricultural development proposed.

9.8 Conclusions

The supporting Highways Technical Note has explored the potential impact from the proposed development. The proposed unit is expected to generate .. additional 2-way trips on the local road network per annum. The development is in addition to the existing farm business and some trip savings are expected from the current farm operations.

As the applicants live at the farm and will operate the day-to-day running of the broiler business it is considered to be a sustainable development from a transport perspective.

The surrounding road network is considered to have sufficient capacity to accommodate the additional vehicle movements, without adversely impacting travel times or highway safety.

10.Amenity

10.1 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 6***.

10.2 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		
Argoed	150m	Applicant's property
Llys Trannon	340m	Relation to applicant
Tan-y-Graig	80m	Relation to applicant
Caesidanen	300m	
Ddraenen-ddu	300m	
Commercial		
None		
Public Rights of Way		
257/62/2	Passes through s-w corner of site	
257/64/1	Passes through Argoed Farm	
257/63/1	Passes adjacent n-e corner of the site	
The above footpath link to other footpaths both uphill and downhill to the site		
Public roads		
Minor road to north	200m	

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

10.3 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.

10.4 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 utilised in the on-farm AD unit. Flies will not be a problem as the manure will be immediately removed to storage facilities on the AD site. Notwithstanding this general control measures will be put in place:

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 Argoed 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 for use in the AD facility.

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. This is not considered to be a significant problem however as the manure will be taken off site on clear out to storage facilities at the AD unit. 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.

Not-withstanding the above any stockpiles required will be carefully managed and monitored, although the management practices will minimise the need to stockpile by taking straight to the AD unit. 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.

10.5 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.

10.6 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. Dust baffles will be used over the ventilation fans to avoid any dust becoming airborne. 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.

In addition 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 is one dwelling within this distance but it is occupied by a member of the family. The prevailing wind will also take any dust particles away from this property. Short sections of footpaths are also within this distance. Mitigation available includes dust baffles over the ventilation fans, 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.

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

10.7 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 closest third party dwellings are owned by family members and away from the prevailing winds. The prevailing wind is from the west south west, which will take any dust away from the closest residential receptor.

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 for use in the on-farm AD unit. This will help to prevent any odour or fly nuisance.

11. Ecology and Biodiversity

11.1 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 in April 2020 can be seen at ***Appendix 7*** of this report.

The Preliminary Ecological Appraisal (PEA) has been completed in connection with this proposal. A site survey was carried out on 22nd April 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

11.2 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*'.

11.3 The Development Site

The proposed development site is located approximately 2 km north-east of Trefeglwys and 4 km west of Caersws, Powys. The proposals involve conversion of the existing poultry shed into a broiler shed and the construction of two new broiler sheds within an adjacent grassland field.

11.4 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.

11.5 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.

11.6 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.

11.7 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)

11.8 Limitations

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

11.9 Baseline Conditions

The ecological baseline was established through a desk study, Phase 1 Habitat Survey and a Protected Fauna Survey and Assessment.

A review of OS maps and online mapping resources was undertaken to identify waterbodies within 500m of the site and designations of conservation concern within 1km of the site.

The existing poultry shed is bordered by hardstanding and disturbed ground with a hardstanding track providing access from a minor road to the north-east via Argoed Farm. The cattle grazed grassland field slopes uphill to the north of the existing shed and has hedgerows along the western and eastern boundaries and sheep-fencing along northern and southern boundaries. A partially fenced line of young trees is present within the eastern part of the field and a further grassland field is located beyond the eastern boundary hedgerow.

To the north of the grassland field is a bank of recently planted trees and rough grassland. To the south of the section of access track adjacent to the poultry shed is an area of mature woodland with a biomass plant built in 2017 present immediately to the south of this woodland.

The surrounding landscape consists of extensive agricultural fields bordered by hedgerows and trees with scattered rural properties. The Afon Trannon runs east to west approximately 0.3 km south of site and enters the River Severn approximately 3.5 km to the east.

11.10 Ecological Surveys

Desk- based Study

Information relating to designated sites where European Protected Species (EPS) Licences have been granted between 2009 and 2016 (only available in England) and historic records of protected species within 2km of the proposed development site were obtained from Magic (www.magic.gov.uk) and other freely available information on the internet, such as proposals.

Phase 1 Habitat Survey

The survey methods were based on the Phase 1 Habitat Survey approach (Joint Nature Conservation Committee 2010), which is a standardised method to survey main habitat types.

Protected Fauna Survey and Assessment

The habitats on site were assessed for suitability for protected fauna that occur in the region and obvious signs and incidental sightings of protected species were

noted where present. Taking into consideration the geographical region and habitat types on and adjacent to site, the protected species groups that could be encountered are listed below:

- Badger
- Bats
- Nesting birds
- Great Crested Newts
- Reptiles

Designated Sites

There are no statutory designated sites within 5 km of the proposed development site and no Ancient Woodland or Priority Habitats.

Coedydd Llawr-y-glyn SSSI / SAC is just over 5 km from the existing and proposed poultry sheds. The SSSI / SAC is one of several sites representing old sessile oak woodland in the core of its Welsh range and comprises a group of woodland blocks set around a series of connected valleys. The woods are primarily of Sessile Oak (*Quercus petraea*) with a typical acidic ground flora of Bilberry (*Vaccinium myrtillus*), Wavy Hair-grass (*Deschampsia flexuosa*) and abundant bryophytes. Other notable species include Oak Fern (*Gymnocarpium Dryopteris*), Beech Fern (*Phegopteris connectilis*) and the lichen (*Thelotrema lepodinum*). The site also has an outstanding bird assemblage.

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
- Building and disturbed ground
- Hedgerows and trees
- Woodland

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

- Badger
- Bats
- Nesting birds
- Great Crested Newt

- Reptiles

11.11 Ecological Evaluation

Phase One Habitat Survey

Grassland

The proposed construction of new broiler sheds will be undertaken within two improved grassland fields that were being grazed by cattle at the time of the survey. The grassland is dominated by common grass species, such as Annual Meadowgrass (*Poa annua*), Perennial Ryegrass (*Lolium perenne*) and Cock's-foot (*Dactylis glomerata*), whilst scattered herb species include Creeping Buttercup (*Ranunculus repens*), White Clover (*Trifolium repens*), Broad-leaved Dock (*Rumex Obtusifolius*), Curly Dock (*Rumex crispus*), Dandelion sp (*Taraxacum sp.*), Spear Thistle (*Cirsium vulgare*), Common Daisy (*Bellis perennis*) and Field Speedwell (*Veronica persica*).

Building and disturbed ground

An existing poultry shed is present in the south-eastern part of site and will be converted into a broiler shed as part of the proposals. The shed has no botanical importance.

Areas of disturbed ground surround the existing poultry shed and include hardstanding access track and a parking and turning area at the eastern end of the shed. These areas of hardstanding and the northern and western sides of the shed are bordered by disturbed ground, consisting of a mix of bare earth and stone and sparse vegetation. Plant species are dominated by species found within adjacent improved grassland with the addition of scattered Soft Rush (*Juncus Effusus*), Smooth Sow Thistle (*Sonchus oleraceus*) and Common Nettle (*Urtica dioica*). Sapling Field Maple (*Acer Campestre*) and Hawthorn (*Crataegus monogyna*) are also present along the steep bank to the north of the existing shed.

Hedgerows and trees

Hedgerows are present along the western and eastern boundaries of the improved grassland field and alongside the existing access track between site and Argoed Farm. Both hedgerows are species-poor and unconnected with the western hedgerow dominated by Hawthorn and Blackthorn and the eastern hedgerow predominantly Blackthorn with patches of Hawthorn and Bramble (*Rubus fruticosus* agg.). Where ground flora is ungrazed species such Foxglove (*Digitalis purpurea*), Cow Parsley (*Anthriscus sylvestris*), Yorkshire Fog (*Holcus Lanatus*), Common Nettle, Lesser Celandine (*Ficaria verna*), Greater Stitchwort (*Stellaria Holostea*) and Lords-and-Ladies (*Arum Maculatum*) are present.

A row of young Silver Birch (*Betula Pendula*) have been planted and partially fenced within the eastern part of the grassland field and immediately to the north of the improved grassland field there is a steep bank that has been planted with a mix of young broadleaved trees and scattered Gorse (*Ulex sp.*).

Woodland

Based on information on Defra's Magic Mapping, the woodland immediately to the south of the proposed development site is classed as Broadleaved Woodland on the National Forest Inventory but is not classed as Ancient woodland or Priority Habitat.

Protected Fauna

Badger

No evidence of Badger was recorded on or adjacent to site. Animal paths were noted passing along and through the field boundary hedgerows but only evidence of Rabbit was found during the survey.

The hedgerow bases and improved grassland provide suitable habitat for foraging and commuting Badger and for setts could be dug around the field boundaries.

Bats

No features suitable for roosting bats were found to be present within or around the boundaries of the proposed new broiler shed construction area.

The existing poultry shed consists of corrugated metal sheet walls and roof on a concrete block base and is generally well-sealed to prevent animals entering the shed. There are a small number of gaps where metal sheets overlap at the ridgeline and at gable ends but they appear shallow and temperature conditions between metal and metal are likely to be too extreme for roosting bats. The existing poultry shed is therefore of *Negligible* suitability for roosting bats.

The boundary hedgerows and scattered trees provide suitable foraging habitat for bats although the improved grassland that dominates the site is unlikely to be of importance for foraging.

A number of suitable roosting features (holes, cracks, splits etc.) are present in the trees within the woodland to the south of the existing access track.

Birds

The existing poultry shed does have the potential to support nesting birds with ledges where the metal sheet walls overhang the concrete base suitable for nesting

Swallow (*Hirundo rustica*) and Pied Wagtail (*Motacilla alba yarrelli*), which were both observed around the shed during the survey.

No evidence of nesting birds was noted within the improved grassland field and ground nesting species, such as Skylark (*Alauda arvensis*), are unlikely to occur due to the close proximity to buildings, hedgerows and trees and short sward of the improved grassland.

The field boundary hedgerows do provide suitable cover for typical farmland nesting bird species.

Great Crested Newt

There are no records of Great Crested Newt within 2 km of the proposed development site and just a single pond within 500m, which is located approximately 160m north of the northern edge of site.

Suitable Great Crested Newt terrestrial habitat on and immediately adjacent to site is limited to the boundary hedgerows and a pile of building materials/waste timber and metal on disturbed ground at the south-eastern corner of site.

The short sward improved grassland is not suitable for foraging or hibernating Great Crested Newt due to the lack of cover and refuges but there is some limited potential for it to be crossed during dispersal.

Reptiles

Suitable habitat for reptiles is limited to the boundary hedgerows, which provide suitable habitat for foraging, dispersing and hibernating reptiles.

The improved grassland that dominates the development footprint is only of limited suitability for dispersing reptiles and unsuitable for hibernating and foraging due to the lack of cover and suitable refuges.

The pile of building materials/waste timber and metal on disturbed ground at the south-eastern corner of site provides suitable habitat for sheltering and hibernating reptiles.

11.12 Habitat Evaluation

The proposed works will affect ecologically poor improved grassland, sapling trees, hardstanding and disturbed ground as well as an existing building, which is of Negligible suitability for roosting bats but could support nesting birds. A field boundary hedgerow and scattered young trees will also need to be removed and these are of some ecological interest.

Field boundary hedgerows are species-poor and unconnected but are suitable for Badger setts and foraging, foraging/commuting bats and nesting birds. They are also of limited suitability for Great Crested Newt and reptiles, which could also occur in the pile of materials located in the south-eastern corner of site.

Designated Sites

No designated sites are within 5 km of the proposed broiler sheds and the Coedydd Llawr-y-glyn SSSI / SAC, just over 5 km from site, is considered far enough away and upwind of the prevailing wind direction to not be significantly affected by ammonia emissions. A full ammonia assessment has been carried out by Isopleth Ltd which shows a betterment in terms of ammonia emissions from the existing layer unit.

The Powys BAP lists 17 Habitat Action Plans, and none of these habitats will be directly affected by the proposals. The site is not designated for its wildlife interest at an international, national or local level and no legally protected plant species were identified or are likely in the habitats encountered. The Powys BAP also lists 28 Species Action Plans, including Great Crested Newt and Pipistrelle Bat, but no significant negative impacts on these species are predicted.

11.13 Recommendations, Mitigation and Enhancement

Appropriate project design and mitigation will be adhered to ensure there will be no negative impacts on notable habitats and protected species potentially present on site or immediately adjacent to site as a result of the proposals. Ecological enhancements are also recommended by Turnstone Ecology to ensure the proposals result in a positive ecological gain.

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

Water treatment and discharge methods should include the following:

During construction, the southern edge of the existing access track will be fenced to prevent any surface water run-off into the area of broadleaved woodland.

- Spill kits will be stored within the site compound during and post construction and all spills will be cleaned up accordingly and if necessary reported;
- All chemical substances and hazardous materials will be stored in accordance EA guidelines with all diesel fuel and other lubricants will be stored in appropriate containers and within double bunded storage areas;

- Any washing of concreting vehicles will be done well away from any woodland, hedgerows, watercourses and/or drainage systems; and
- Any re-fuelling and re-lubrication will only be completed in an approved area in which a spill kit is available.

The proposed attenuation pond can be enhanced for the benefit of biodiversity and it is recommended a wet meadow seed-mix is used around the feature and marginal and aquatic native plant species planted and/or encouraged. The creation of an aquatic habitat will significantly increase biodiversity on the proposed development site.

Habitats

The PEA concludes that the loss of areas of ecologically poor improved grassland, hardstanding and disturbed ground is unlikely to have a significant negative impact on biodiversity and specific mitigation measures for these losses are not considered necessary. Mitigation is however required to offset the loss of a section of hedgerow, although it is species-poor and unconnected, and scattered young trees and retained hedgerows and trees will need to be protected.

The proposed areas of groundworks will be confined to areas that will not impact on the root systems of the existing and retained boundary hedgerows and trees. An appropriate buffer (as detailed in BS5837:2012) will need to be established.

In order to enhance the biodiversity of the site and offset the loss of a section of hedgerow, planting up of gaps within existing hedgerows and planting of trees around the northern and western and south-western parts of the improved grassland fields is recommended by Turnstone Ecology. The planted-up hedgerows will consist of an improved diversity currently found on site with a mix of Oak, Hawthorn, Blackthorn, Dog Rose, Hazel (*Corylus avellana*), Honeysuckle (*Lonicera periclymenum*), Holly (*Ilex aquifolium*) and Elder (*Sambucus nigra*). Any additional tree planting proposed around site should comprise native species such as Field Maple (*Acer campestre*), Sycamore (*Acer pseudoplatanus*), Oak, Silver Birch (*Betula pendula*) and Crab Apple (*Malus sylvestris*).

It is recommended that 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 additional hedgerow planting will be monitored for a minimum 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

hedgerow planting is for them to be laid when they are between 7 and 10 years old; depending on rate of establishment.

The landscaping embankments can be seeded with a native wildflower seed mix suitable for pollinators and the soil type.

Habitats

The Ecological Appraisal highlights that the construction works will affect ecologically poor improved grassland and hardstanding and the loss of these areas are unlikely to have a significant negative impact and specific mitigation measures for this loss are not considered necessary.

The proposals will also affect an approximate 85m length of BAP habitat hedgerow and it is considered that three trees of higher ecological value and specific mitigation measures are required to compensate for this loss. The existing boundary hedgerows will be planted up to create dense continuous field boundary hedgerows with the exceptions of making the access gateways. Hedgerow planting should comprise native broadleaved species including a mix of Hawthorn, Blackthorn, Holly, Hazel, European Spindle (Euonymus europaeus), Dog Rose, Honeysuckle (Lonicera periclymenum), Elder, Field Maple and Dogwood (Cornus sanguinea).

Hedgerows will be double planted with six plants per metre; mulching or weed suppressing mats will be used to air good establishment of woody species. Plants will be 80-100cm bare root whips, planted between November and March and staked and protected with a bio-degradable tree guard 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 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.

The planted up field boundary hedgerows and additional tree planting will compensate for the loss of the 85m length of habitat hedgerow and three trees.

The groundworks will be confined to areas that will not impact on the root systems of the existing and retained boundary trees.

Protected Fauna

<u>Badger</u>

The loss of an area of improved grassland is unlikely to have a significant negative impact on foraging Badgers and based on there being no evidence of Badger on or adjacent to site at the time of survey it is unlikely that holes will be dug before construction works. However, to ensure foraging Badgers do not become trapped within any excavation works associated with construction works excavations should either not be left uncovered overnight or ways of escape for Badgers provided (wooden planks or graded earth banks).

Bats

There is no suitable roosting habitat within or around the proposed development site however the boundary hedgerows and trees do provide suitable commuting and foraging habitat for bats.

A lighting plan showing the location and specification for any proposed lights on the site will be produced and will reflect the Bat Conservation Trust Bats and Lighting in the UK guidance (2018). The lighting plan will include directing lighting away from the retained boundary hedgerows and trees, away from any new roosting provision and away from the existing residential dwellings to the north-west and south-west.

The PEA recommends that long term bat roosting provision should be incorporated into the proposals and should include up to four bat boxes erected within the broadleaved woodland to the south of site. Boxes to be suitable for a variety of species and for use by breeding bats, preferably erected on south-east or south-west aspects, a minimum of three metres above ground level.

Any hedgerow and tree planting around the development footprint will ultimately enhance the site's suitability for foraging and commuting bats and offset the loss of an unconnected section of hedgerow that is only of limited suitability for bats.

Nesting Birds

There is the potential for birds nesting on the existing poultry shed but the grassland is unlikely to be used by ground-nesting species. The boundary hedgerows and trees are suitable habitats for nesting birds but given the habitat types present on site, it is considered extremely unlikely that any notable breeding birds would be present within or immediately adjacent to the proposed development footprint.

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.

Any habitat creation, enhancement and management, such as the planting of hedgerows and trees, would only have a positive impact on nesting birds at the site. The PEA sets out that a combination of three open-fronted nest box and three

single hole-fronted nest box should be erected within the broadleaved woodland to the south of site.

Great Crested Newt

Taking in to consideration the distance and poor connectivity between the construction areas and the nearest pond, lack of records within the vicinity of site and the poor suitability and extent of habitats affected by the proposals, it is considered very unlikely that Great Crested Newts are or will be present within proposed development footprint.

Reptiles

The presence of reptiles within the development footprint is considered unlikely based on the suitability of habitats affected.

The boundary hedgerows and piles of materials in the south-eastern corner of site are suitable for reptiles and appropriate mitigation measures will be adhered to avoid killing or injuring reptiles if these features are affected by works. These methods would 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 clearance of the timber and building materials will be undertaken by hand and when reptiles are active (March to October inclusive).

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

In the unlikely event of a reptile being found during works then an experience ecologist will be contacted to provide advice (such as encouraging it away from works but not to be handled) and/or complete a visit to site to move the it to suitable habitat unaffected by the proposals.

11.14 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 trees as part of landscaping works will provide an intermediate positive effect.

Any potential negative impacts can be minimised through the proposed mitigation measures. Overall the ecological value of the site will be enhanced.

12. Noise and Vibration

12.1 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 8*** 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.*

The assessment is based on the results of a baseline noise survey undertaken from 9th to 16th June 2020. The noise survey was carried out when the existing shed was operational and noise from this is considered to be part of the existing background noise level.

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

12.2 Site and Development

<u>Existing Site</u>

The existing site is at Argoed farm and includes a laying shed accommodating up to 32,000 birds. There is an AD facility to the south of the poultry shed which was not operational during the noise survey. The site is within a rural area with a number of residential receptors in the area. The NIA has identified the nearest receptors to be considered and allocated reference numbers. These can be seen below:

Location	Relationship to Farm	OS Grid Reference	Approximate Distance from Application Boundary (m)
AL01 – Argoed	Landowner	298904, 291331	150
AL02 – Llys Trannon	Relation	298706, 291438	340
AL03 – Heulwen	None	298538, 291617	540
AL04 – Tan-y-Graig	Relation	298986, 291466	80
AL05 – Caesidanen	None	299545, 291398	300
AL06 – Ddraenen-ddu	None	299548, 291249	300

Table 12.1: Noise Receptors

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

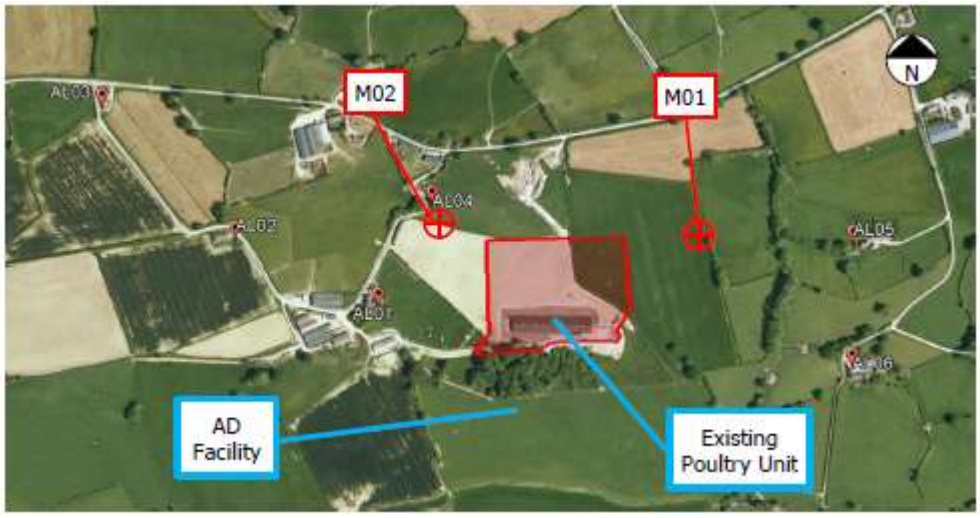

Figure 12.1: Location of noise receptors and monitoring

The Mid Wales shooting centre is approximately 750m to the s-w of the site. During the noise survey the centre was closed due to coronavirus restrictions.

Proposed Development

The existing shed currently accommodates 32,000 birds. Ventilation for the existing shed is provided by side wall fans and roof mounted ridge fans. The shed is to be retro fitted to create a broiler space accommodating 55,000 birds. The three new sheds are to accommodate a further 55,000 birds each, giving a total of 220,000 birds. The site is to be excavated and terraced to accommodate the buildings within the steeply sloped landscape. The southern-most new shed is to be built at the level of the existing shed. The second and third new sheds are to elevated by around 3m above the existing shed.

The terracing of the development in this way results in the site being in cutting, below the ground level to the immediate north with a height difference between the site level and ground of up to 8m in places. This provides a partial screening influence between the ventilation fans and the receptors to the north, east and west.

The new and existing sheds will include the following plant:

- 15 no. ridge mounted extraction fans
- 6 no. gable end fans
- Feed bins

12.3 Methodology and Guidance

Technical Guidance Note IPCC SRG 6.02 (Farming)

The technical note sets out guidance and best practice for the assessment of noise at pig, poultry and sow installations. The guidance is applicable to intensive poultry operations with at least 40,000 birds; developments which are subject to Integrated Pollution Prevention and Control (IPCC),

Guidance details under what circumstances a noise impact assessment may be required and states that the assessment methodology must follow the procedure as detailed in British Standard 4142:1997 Method for rating industrial noise affecting mixed residential and industrial areas, which has now been superseded.

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.

12.4 Baseline Noise Survey

A baseline sound survey was undertaken by SLR at the site between Friday 22nd March and Tuesday 26th March 2019. Details of the equipment used and the exact locations can be seen in the NIA at ***Appendix 8***. A number of key factors in the immediate vicinity resulted in conservative noise levels during the survey. The AD facility at the farm nor the nearby shooting centre were operational.

Weather

The weather during the collection period was similar to the set-up, with an ambient air temperature of 18°C, dry and with low wind speeds. The prevailing wind direction was from the north / north-west.

Nosie Climate

At M01 (indicated on figure 12.1) was influenced by fan noise from the existing poultry shed. The fan noise was audible as a low level, broadband hum during periods when the wind or other agricultral noise were absent.

At M02 the noise climate included audible noise from the existing poultry unit and other agrciultural activites from livestock and sheep sheering taking place at the farmstead. Other noise inlcuded bird song and some light wind nosie from the nearby vehetation.

Noise Level Results

Full results and analysis of the measured sound levels can be seen in the NIA at *Appendix 8*.

It was found that at M01 the difference between daytime and night time periods is generally quiet moderate and that there is no significant difference between the week and weekend due to the rural location of the site. The prevailing ambient noise climate falls within the range LAeq 43dB and 53dB with moderately higher noise levels occurring during periods of rain and higher winds. The mean of the background sound level ranges between LA90 29dB and 41dB though the mode demonstrates a slightly greater range.

At M02 the difference between the daytime and night-time periods is not particularly pronounced and there is little difference between weekday and weekend. The mean background sound level (LA90) over the daytime and night ranges between 34dB and 40dB. The mode generally falls within the same range.

Typical background sound level in the daytime (07:00 to 23:00) at M01 is slightly lower than that of M02. The integer mode is considered typical and at M01 is 32dB L_{A90}, and M02 37dB L_{A90}

Night-time (23:00 to 07:00) at M01 is dispersed and as such the mean value of 30dB is considered typical. At M02 the mode value of 35dB is considered typical.

Appropriate rating level noise targets have been presented in the NIA at *Appendix 8*. In all cases noise levels are below WHO guidance levels for sleep disturbance.

12.5 Noise Modelling Assessment and Predictions

Full details can be seen in the NIA at *Appendix 8*.

Noise sources:

Ventilation fans

Plant	Description	Number	Noise Data*
Fancom Type3680	Ridge Fans	15 per shed (60 in total)	L_{pA} 70dB @2m per fan
Fancom 3480P	Gable End Fans	6 per shed (24 in total)	L_{pA} 77dB @2m per fan
* Noise data for fans at 100% operation obtained from Fancom Agricultural fans data sheet			

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 three categories as follows:

Minimum Transitional Tunnel Ventilation (MTT) – minimum ventilation to bring fresh air into the house and exhausts stale air. As the brood grow more demand is put on the fans. Ventilation requirements are lower at night-time.

Transitional Ventilation – removes excess heat from the sheds when the internal temperatures exceed at set criterion usually during later portions of the crop cycle. Transitional ventilation utilises ridge and gable fans and is unlikely to be required at night.

Tunnel ventilation – only used during hotter times of the year. The gable end fans are used to cool the houses. Tunnel ventilation is unlikely to be required at night.

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.

The following assessment scenarios have been assessed:

Assessment Scenario	Operational Phase		Description	Assessment Period
Scenario A	Minimum Ventilation	Stage 1 Ventilation	Ventilation requirements up to the end of day 14 of flock cycle. 9% on time for ridge fans.	Daytime hours
		Stage 2 Ventilation	Ventilation requirements up to the end of day 21 of flock cycle. 13 % on time for ridge fans.	
		Stage 3 Ventilation	Ventilation requirements up to end of day 28 of the flock cycle. 18% on time for ridge fans.	
	Minimum Ventilation	Stage 4 Ventilation	Minimum ventilation during the night-time period. 9% on time for ridge fans.	Night-time
Scenario B	Transitional Ventilation	Stage 5 Ventilation	Transitional ventilation between ridge and gable end fans. 15% on time for ridge and gable fans	Daytime only
Scenario C	Tunnel Ventilation	Stage 6 Ventilation	Maximum ventilation requirements during the hottest portions of the year. 100% on time for gable fans.	Daytime only
Scenario D	HGV Movements	De-population	Final clearance of the poultry sheds. No fans	Night-time only

Table 12.3 Assessment scenarios

12.6 Operational Assessment

The full results can be seen in the NIA at ***Appendix 8*** with the findings set out below. It should be noted that the receptors identified as AL01, AL02 and AL04 are linked tgo operations at the farm and as such have been assessed against different criterion. The assessment includes noise from vehicles along the fram access track.

Scenario A Minimum ventilation:

The assessments presented in the NIA, representing typical activities at the poultry sheds would fall between 3dB and 17dB below the set noise limits. This is considered to indicate a low noise impact at all of the receptors considered in accordance with BS 4142:2014.

Scenario B Transitional ventilation:

The assessment presented in the NIA indicates that the noise generated by the new poultry units would fall below the set noise limits and would be a low noise impact in line with BS4142:2014.

Scenario C Tunnel Ventilation

Only required during daytime hours of the hotter portions of the year and when the birds are large enough to withstand and chill generated by the increased air flow.

The predicted levels indicate that noise with all of the gable end fans operating would not exceed the set noise limits. This would indicate a low impact in accordance with BS4142:2014.

Land Owner Property – AL01

Given the like to the development these properties have been assessed in line with the absolute limits.

The assessment presented above indicate that noise generated by the new poultry units would fall well below the external noise limits at the financially linked dwelling. The predicted noise levels detailed above are such that, if calculated to an internal receptor, the noise levels would fall comfortably within the internal guideline values of the WHO. Given this it is concluded that the additional poultry units would not be detrimental to amenity.

12.7 Vehicle Movements

The access route to the farm is down the lane past receptors AL02 and AL03. Given the specifics of the site and the route of the access road, it is considered appropriate to assess the noise generated by HGV movements to and from the site in line with the Haul road methodology detailed in BS5228-1. The following attributes have been used in the calculations:

- The source noise of an HGV under acceleration is a sound power level of 105.5dB(A)2; and,
- Vehicle speeds are limited to 10mph (16kph or 4.4m/s).

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 5**

The Transport Note indicates that over a single crop cycle, 53, 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 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.

The calculations in the NIA centre on receptors AL02 and AL03 being the most significantly affected by vehicles of the access track.

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 AL02 but would slightly exceed the target at AL03 by 1dB. Nevertheless, in both cases the noise from HGV movements during the night-time period would generally be of low impact especially given the context of the agricultural environment and fact that depopulation will occur one night per crop cycle.

12.8 Summary from the NIA

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

The noise assessments have been informed by a baseline and ambient noise survey undertaken between the 9th and 16th June 2020. From this data, appropriate noise limits have been derived in accordance with BS 4142: 2014 to minimise adverse impact.

The assessment indicates that, under the various operational scenarios considered within this report, noise generated by the proposed extension would fall below the noise limits derived from the measured background sound level at all of the linked and third-party receptor locations.

Further assessments indicate that predicted noise levels at the land owner's property would not result in any detrimental impacts in accordance with the WHO guidelines.

Additional consideration of the noise associated with vehicle movements indicates that, generally noise from HGVs would generally fall below the proposed noise limits however, may exceed the background sound level at one location during the night when depopulation occurs. Notwithstanding this, the impact of noise associated with delivery vehicles is considered to be of low impact.

The NIA concludes that there are no noise-related issues associated with the proposed poultry farm development at Argoed Farm which would prevent the proposals being granted planning permission.

12.9 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.

13. Odour

14.1 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 9*.

14.2 Environmental Permitting

The Planning and Environmental Permitting processes are separate but complementary. At the time the Odour Report was produced (March 2019), 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 also supports this application.

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.

14.3 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.

14.4 Aims and Objectives

The objectives of the assessment are as follows:

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

14.5 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. **P/2017/1109** - Proposed erection of a broiler shed to include 2 no.feed silos and associated works. Ddole Farm, Llanbister LD1 6SS.

2. **P/2017/1031** - Erection of an agricultural building for free range broiler production and associated works. Tanhouse Dolau, Llandrindod Wells LD1 5TL.

3. **P/2017/0325**. - Proposed erection of 2 no. Poultry buildings for broiler breeder rearing, four no. feed bins, new access track, improvements to existing entrance, creation of one new passing place installation of septic tank and associated development. Cwmroches, Llandrindod Wells, LD1 5SY.

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 most recent similar application within the Powys Council area was Application Reference 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 at Glanmiheli Farm Chicken Units, Kerry, Newtown, Powys SY16 4LN.* This was approved on 6th March 2020.

14.6 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.

14.7 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.

14.8 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 Argoed Farm. In reality emission rates would be expected to be significantly lower.

14.9 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.

14.10 Assessment Scenarios

Two assessment scenarios have been modelled to represent the existing emissions from the free-range layer facility and the typical operation of the proposed facility with the maximum proposed number of broilers 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.

14.11 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. fat frying (food processing)
- **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.

14.12 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 17 receptors are presented within the Odour Report.

The occupants of Argoed Farm have a vested (economic) interest in the success of this development and are also in a position to directly affect the emissions from the facility. They are therefore not regarded as sensitive receptors for purposes of the odour assessment. Similarly the family also owns Tan-y-Graig and Pen Ffrydd (receptors 2 and 4 in the OIA). It is understood that Oaktree Cottage (receptor 3 in the OIA) has not been occupied for over 5 years although there is potential for it to be occupied in the future.

Ventilation Flows

Ventilation is important for the bird's health and will affect production levels. It is applied when cooling is required and for the maintaining the composition of the indoor air at the required levels. Parameters that need to be ensured include:

- NH3 concentration not exceeding 20 ppm

- CO2 concentration not exceeding 3000 ppm
- Indoor temperature, when the outside temperature measured in the shade exceeds 30 °C, not exceeding this outside temperature by more than 3 °C
- Indoor average humidity, measured over 48 hours not exceeding 70% when the outdoor temperature is below 10°C

Design ventilation flows have been provided in the OIA at ***Appendix 9***.

The 15 roof ridge fans per building will be capable of moving a maximum of 17500m3 /hr (4.9m3/s). Gable end fans are available in case of additional ventilation requirement on the hottest days. The variation in ventilation is based on the welfare needs of the birds and is a function of external temperature and bird age/size.

Emission Rates

Free Range (existing): Odours from fee range operations are generally lower than for intensive broiler operations. Modelling is based on a NRW accepted odour emission factor of 0.47 $_{OUE/S}$ per bird. Due to the lower ventilation requirements for layers an efflux velocity of 3m/s has been used.

Broiler (proposed): 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.

14.13 Odour Impact Assessment

Model Domain and Assumptions

Modelling was carried out at 40m resolution over a 1.2km by 1.2km 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 from the ridge fans has been taken as 6m/s which is regarded as cautious in terms of dispersion.

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. The houses have a pronounced ridge which cannot be incorporated into the model. The roof height modelled is 4.818m.

Local Wind Speed and Direction Data

The most important meteorological parameters governing the atmospheric dispersion of pollutants are wind direction, wind speed and atmospheric stability.

The closest Met Office sites to the site are:

- Trawsgoed
- Lake Vyrnwy No2
- Shobdon

None of these are ideal given the setting and distance from Argoed Farm. In these circumstances, the impact may be modelled using a 5 year Global Forecasting System (GFS) resolution Numerical Weather Predication (NWP) meteorological data set. This is detailed in the OIA at ***Appendix 9***.

Temperature

Analysis of 5 years (2014-2018) meteorological data recorded at Shobdon (the closest recording site) shows that the temperatures very rarely exceed 25°C.

Met Data Preparation

The determination of Bowen ration albedo is defined by a 10km x 10km region around the site. The surrounding land use has been characterised as grassland (90%) and deciduous forest (10%).

Topography

The topography of the surrounding area within the modelling grid is variable, lying between approximately 121AoD towards the south and south east into the valley and 224m AoD in the north west at Pen-y-Ddol.

Site elevation data has been included in the dispersion model, with the base of the facility lying between 175m (existing building and new building 1) and 178.5m AoD (new buildings 2 and 3).

14.14 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 Table 6.1, within Appendix C of the Odour Report and tabulated below:

Ref	Description	Existing Impact (ou_E/m^3)	Future Impact (ou_E/m^3)
D1	Argoed (not sensitive)	1.02	2.33
D2	Tan Y Graig (not sensitive)	1.00	2.76
D3	Oaktree Cottage	0.66	1.66
D4	Pen Ffrydd (not sensitive)	0.53	1.32
D5	Penrhos	0.37	0.80
D6	Ysgubor Hir	0.29	0.60
D7	Llys Trannon	0.35	0.70
D8	Heulwen	0.12	0.23
D9	Cefn	0.33	0.55
D10	Ffrid-uchaf	0.32	0.60
D11	Coed-Y-Ffridd	0.31	0.62
D12	Fron-Derw	0.46	0.98
D13	Pen-Y-ffynnon	0.55	1.21
D14	Caesidanen	0.99	2.38
D15	Ddreanen-Ddu	0.91	1.54
D16	Llechwedd-Ddyrys	0.55	0.93
D17	Mid Wales Clay target centre	0.12	0.19

The odour impacts of the existing layer operation are predicted to be low (negligible). The highest average predicted impacts from the proposed 220,000 bird broiler facility are at the nearest houses to the west and north west, at Argoed Farm and Tan Y Graig, both of which are owned by those associated with the farm. The highest impact at a receptor not associated with the farm is at D14 Caesidan. This

would be considered as a 'slight adverse' effect. Odour will be perceived this location (i.e. it will not be 'odour free'), however this will not be at a level which would normally be considered unacceptable at this location according to IAQM Guidance or NRW. It should be noted that, at 2.38 ouE/m3 the impacts at D14 Caesidanen are just below the NRW limit for new facilities and the threshold of IAQM significance for moderately offensive odour impacts at high sensitivity receptors.

The OIA breaks the above average impacts into individual years and concludes that if additional measures are taken to mitigate 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.

14.15 Conclusions from the OIA

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

Dispersion modelling has been completed which predicts that the occasional odour will be perceived the closest locations, however Isopleth Ltd conclude 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.

14.16 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 buildup
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. • The birds water consumption will be monitored daily along with humidity within the building.	Annually- June

	• 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. • Terminal hygiene plan to be followed at all times.	Annually - June

	• 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 Creation of dust during feed delivery	Feed delivery systems sealed to minimise atmospheric dust

		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.

14.17 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.

14.Drainage Assessment

15.1 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 10***.

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.

15.2 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 10.***

15.3 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, permeable soils underlain with the Rhayader Mudstone formation.

Surface Hydrology and Drains

There is an existing ditch located to the north of the access track leading up to the site. Water from the site presently runs down to this track and ultimately enters this ditch. The ditch leads to an ordinately watercourse at the bottom of the slope, crossing beneath the access track. The ordinary watercourse then runs off to the south and eventually joins the Afon Trannon, which is a tributary to the River Severn / Afon Hafren.

15.4 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 in the in-farm AD unit

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

15.5 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.

15.6 Drainage Assessment

A Drainage Assessment prepared by Berrys can be seen at ***Appendix 10*** 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). A surface water infiltration test has previously been carried out on the farm which can be viewed in Appendix A, which provides a calculated infiltration rate of 2.61E-5 m/s. Whilst we consider this to be a favourable rate of infiltration, further testing will be required at the detailed design stage to corroborate the exact ground conditions below the drain invert levels at the application site.

Given the earthworks required to construct the proposed buildings will result in the invert level of the drainage features being well below the existing ground levels, the ground conditions may be substantially different at these depths. The British Geological Society and the Cranfield University Soilscapes maps have been consulted, which show the site as having loamy, permeable soils underlain with the Rhayader Mudstone formation. Mudstones have significantly varying degrees of permeability and the depth of the bedrock is unknown, therefore the actual permeability of the levelled site will need to be verified as above. Furthermore, having discussed the site ground conditions with the applicant, when constructing the existing egg-layer poultry building at the site they encountered heavy clay ground with poor permeability. Therefore, an outline scheme of drainage has been developed which deals with the eventuality that some attenuation and a controlled discharge with a hydrobrake or similar device to an existing watercourse will be required.

The proposed system of surface water drainage will consist of various components to collect, convey and treat surface water. It is proposed 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 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.

An attenuation pond is proposed to be located to the east of the lower-level buildings within the loop of the track leading between the lower and upper yard areas. The attenuation pond will be designed as an integral landscaped feature of the site and will be utilised to maximise the biodiversity benefits of the development. The design will be based around the guidance in the Ciria C753 SuDS manual. A forebay will be provided at the pond inlet to treat and control the velocity of inflowing water and a long flowpath will be provided between the inlet and outlet structures. A wetted basin will be provided below the storage invert level to provide aquatic habitat for various fauna and flora. A flow control chamber will be constructed at the pond outlet, which will 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.

Surface water from the pond will discharge to an existing ditch located to the north of the access track leading up to the site. Water from the site land presently runs down to this track and ultimately enters this ditch, so post-development the water will broadly follow the same flow path as existing. The ditch leads to an ordinately watercourse at the bottom of the slope, crossing beneath the access track. The ordinary watercourse then runs off to the south and eventually joins the Afon Trannon, which is a tributary to the River Severn / Afon Hafren.

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 pond and then from the pond along the existing flow path to the ditch. This will mimic the existing natural land drainage routes, however the pond 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.

The Drainage Assessment at ***Appendix 10*** shows a storage estimate and greenfield runoff estimate taken from the HR Wallingford UK SuDS site. This predicts for the estimated 1.2 ha of impermeable site area that a total attenuation volume of 1510 m3 is required and the 1 in 1 year rate of greenfield discharge for the site is 8 l/s. These parameters are considered to be a guide only and further calculations will be required at the detailed design stage.

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

Staff welfare facilities will be provided within the existing converted egg layer building, so a system of foul drainage will be required. As the site does not benefit from being within an area served by public sewers, a package treatment plant will be required. The size of the treatment plant will be determined from the site loadings calculated in accordance with Flows and Loads 4. Given the topography of the land surrounding the site, it is considered that it may not be feasible to provide a drainage field soakaway as these require very flat or terraced areas with a maximum gradient of 1 in 200. Therefore, it is more likely that a discharge to the watercourse will be required.

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 rules for storing silage, slurry and agricultural fuel oil. A tank will be provided for each pair of buildings and corresponding yard and each will provide 22,000 litres of storage. 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.

15.7 Surface Water/Groundwater – Dirty Water

Land available for spreading

The dirty water collected following wash down following shed clearance will drain to two new 22,000 litre tanks located in the yard area. This will receive water from ACO type channels located in front of the buildings and channels/gullies at the lowest point in the sheds. All dirty water collected will be spread on the applicant's farmland or utilised in the on-farm AD unit

Dirty Water Production

All dirty water from washing down will be collected in an appropriate tank located at the front of the poultry units. 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 or utilise in the on-farm AD unit.

Conclusions

All dirty water will be collected and appropriately spread on the farmlands within the ownership of the applicant or utilised in the on-farm AD unit. 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.

15.8 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 to the on-farm AD unit 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.

15.9 Conclusions from the Drainage Assessment

A drainage strategy has been devised for the proposed broiler poultry development at Argoed Farm, near Trefeglwys. 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.

15.Summary and Conclusions

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

Key Issue	Potential Impact	Principal Mitigation	Residual Impact Significance
Air quality, health and climate	Effects on designated habitats and ammonia emissions and deposition	Heating from AD unit, reduction in emissions from units. Tree planting	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 and built in controls Best Available Technique.	Minor Significance
	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. Tree planting	Not significant
	Improved grassland	Choice of site and good design	Minor significance
	Trees and hedgerows – loss of species poor hedge	Avoid direct disturbance to retained features and control of lighting. Planting scheme to replace lost hedge	Minor significance

	Birds	Vegetation removal between Sept and Feb	Not significant
	Bats	Control of lighting	Not significant
	Great crested newt	Use of RAMS	Not significant
	Reptiles	Appropriate safe working methods	Not significant
	Badger	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	Not significant
	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 place in buildings and hard standing Compliance with EA guidance and EP, use of bunded areas, storage of chemicals, oils etc in appropriate	Insignificant impacts – low risk

	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