Application for Environmental Permit EPB3.5 (Version 4)

Buckles Farm, Kaber, Kirkby Stephen. Cumbria

Pre Application Ref.EPR/GP3001LP/A001

BF 2. Operations

The principal operation on site will be the production of free range eggs from 4 No. units, (2 houses) using an ‘aviary system’ of housing on an area of 32 Ha.

BF 2.1 Permitted Activities

In addition, each of the two buildings will be served by a small septic tank and soakaway system. As staffing is limited to 2 FTE for 8 hrs/ day, the volume of wastewater will be significantly under the design volumes and dry ground conditions in each locality support this method of disposal. The intention is therefore to operate these under General Binding Rules.

BF 2.2 The site

The site is limited to the area edged green on site Drawing BF 2.2 (See also drawings 2.2.(i), (ii), (iii), (iv),

BF 2.3 Operating Techniques.

2.3.1 Selection and Use of Feed

* There will be three diets over the duration the flock cycle. These will change to ensure diet will meet the birds’ metabolic needs but minimises the quantity of nitrogen and phosphorus that passes into manure. Specifically the phosphorus content will progressively reduce.
* Analyses of the feedstuffs and their corresponding manure analyses are taken to establish a baseline relationship and discussed regularly with term agronomist to establish optimal analysis of manure when considering whole cycle benefits to agriculture, including potential to reduce inorganic fertiliser applications.
* Towards the latter stages of the cycle, increased Calcium is added to tailored feedstuffs for animal welfare / shell quality. This is not readily adsorbed and therefore contributes to Ca application on manure spreading. All fields in this area (soil chemistry) require lime application on occasions and this opportune Ca inclusion frequently meets that need.

2.3.2 Housing design and Management

The installation for a free range egg farm at Broxty Farm has been designed to meet best practice within the poultry sector (eggs) in all aspects including those of securing environmental integrity, flock welfare and biosecurity. Their principal contractor, Big Dutchman, is a leading European company in the design and enhancement of aviary systems like this. The following features of the housing are considered important elements in protecting the *air*, *land* and *water* environments against adverse impacts.

The configuration of the poultry farm is to have two buildings, each with 2 x 16,000 bird units. The original building is longitudinal with a central services section whilst the proposed building will be a single building with an interior separation wall running the whole length of the building. The latter will have a Central Service Area at its eastern end.

Ventilation arrangements are:-

|  |  |  |
| --- | --- | --- |
| House No.  | Inlet ports | Expelled air |
| 1a | 6 No. on roof ridge. No fan assistance | 10 No. roof mounted high velocity fans |
| 1b | 6 No. on roof ridge. No fan assistance | 6 No. gable end fans with downward directing flap shutters |
| 2a | 6 No. on roof. No fan assistance  | 6 No. gable end fans with downward directing flap shutters |
| 2b | 6 No. on roof. No fan assistance | 6 No. gable end fans with downward directing flap shutters |

All houses are designed on an “Aviary system” with tiers but no cages. Manure belts have additional drying and proposed houses 2a and 2b will have warm air jetted onto manure belts. Manure removal 2 to 3x / week.

Forced air drying will be applied to all houses via heat exchangers.

The whole farm is free range based with associated pop-holes and air flow management systems controlled to recognise this factor and prevent unnecessary heat loss. All data collected for annual analysis and alterations made if required.

Floor

* Concrete floor has damp proof membrane to prevent ingress of water.
* Along the contour to the higher ground are to the south of the buildings, the existing field drains/ old stone drains will be intercepted and directed to the ditch that runs to the north of Houses 2a and 2b.to prevent their contribution to ground water in the vicinity of the poultry house footprint. This will also contribute to reducing risk of upward water pressure under the floor’s impermeable membrane.

Walls and Roof

* Insulated to minimum U value of 0.4 W/m2 reducing risk of condensation. Walls are clad with 40mm ‘*kingspan type’* panels and the roof with 150mm fibre rock wool.
* Pop holes designed and maintained to minimise rain getting into building.
* Areas around pop- holes will be managed to prevent compaction and surface water retention or erosion. This area is drained by field tiles and the collected drainage treated as ‘lightly contaminated water’ by the swale system. Again an impervious membrane will line the base. (see drawing )

Drinkers

* Nipple drinkers are of the most recent design to minimise leakage and / or failure will be installed, including larger spill cups.
* Nipple drinkers set at correct height to reduce spillage. (Alters with growth of hens over cycle.)
* Water pressure on feed system lowered from borehole supply pressure to minimise spill risk and impact by use of header tanks in Central Services area. Tanks at approx. 3m head.
* Daily water usage figures provide patterns including faults in water system.
* Computer registers and alarms immediately any drop in line pressure which could be due to a drinker leakage or failure.

Feed

* Feed stored in external silos is fed by closed auger maintaining dryness, into a delivery hopper. Computer control then delivers by chain mechanism to feeding stations. Feed structure kept intact. (crumb size)
* Feedstuff will be changed 2 times during the period the flock are laying to ensure diets are specific to that phase. In particular the level of N and P in the food is tailored to match bird needs and minimise excretion. N and P contribute to general pollution but particularly N as a component of ammonia. Aim is for maximum conversion (to egg) and minimum waste. Food formula optimises element take up needed for egg production and bird metabolism.

Climate

Temperature and humidity are monitored constantly and data used to make adjustments.

* Through computer control, adjust temperature and humidity to create optimal conditions for flock welfare and through that, maintain low moisture content in litter. (less ammonia generation)
* Climate controlled to minimises both ammonia and dust creation and subsequent release to atmosphere.
* Supplementary heating is provided by air space heater on all 4 No. houses . Heat retained through high levels of building insulation. In houses 2a and 2b warm air is directed onto manure belts. Climate controlled occurs through extractor fans, matched by passive roof apex inlets. Pop holes have neutral pressure preventing damp air near ground level from entering house to any degree. Where and when possible, air exchange will be passive, saving additionally on energy and prevention of excess water vapour being introduction during winter months.(wet air).

Manure, slurry collection and storage.

* Manure / litter is collected continually onto manure belts at all four units and removed from the house to a trailer 2-3 times / week compared with BREF guidance on once / week for aviary systems. Belts serve:- perches, feeders, drinkers and nest boxes to avoid ammonia rich conditions around the hens but also removes material before it has opportunity to degrade and generate ammonia. (and other gases. \*Ammonia generaion usually starts after 2 days.). The latest design of collection belts for this aviary system ensures a large proportion of the footprint of the building is served and a high proportion of that area fouled by the birds. Ie. most manure is passed during drinking, perching, feeding and egg laying.
* Floor space within the sheds can also be scraped if necessary although this is not planned for. Removal of fresh droppings, predominantly captured by the belt collection system, reduces degradation of protein.
* Wash- water is only generated when the houses have been emptied of stock at depletion and the solid manure/ litter removed physically. Wash water is therefore minimal and produced for a short time. All internal drainage is directed to sealed tanks and management systems ensure its removal from the site quickly. Outlets for disposal to appropriate land are always available.
* Solid manure is removed daily through a belt system to a trailer immediately outside of the house. Delivery to the trailer from the conveyor is via a ‘sock’ to prevent disturbance and aerial emissions. This manure is presently taken off site and used on the family farm or stored at neighbouring farms. In the future a bespoke covered manure store will be able to receive manure to prevent storage in wet conditions on other farms and help retain nutrients (especially N) for maximising manorial value. On all outlet farms manure is and will be calculated to contribute to their nutrient budgeting plans. Litter will be inspected / monitored constantly to confirm it is ‘friable and loose.’ Capping and excess wetness could be sign of flock disease, and may also impact on environmental quality. However new additional air heaters being installed on houses 1a and 1b will have capacity (1Mw) to contribute heat to proposed houses 2a and 2b.

Shed emptying (approx. every 13- 15 months)

* Shed emptying of stock will be conducted by trained handlers who efficiently remove stock with minimal stress. This also minimises dust and supports animal welfare criteria.
* Animal movements on and off the farm need to be recorded and forms part of the database required by agencies
* When empty, houses are inspected and repairs effected which could threaten building integrity.

Litter and manure

Operational staff inspect litter quality daily and are trained to identify and address first signs of litter deterioration such as excess in dryness or wetness. Specifically:-

* Extra bales of sawdust for bedding are stored in Central Services area.
* Drinkers provided with ‘larger’ drip cups, water pressure lowered and any further drop in pressure due to failure, is alarmed.
* Existing and proposed houses both have DPM under concrete floor. Scratch areas on existing and proposed houses are under-drained to treatment swales and proposed house will also have DPM under scratch area containing underdrainage and directed to swale. Existing house will consider this retrofit if scratch area stone surfacing ever needs replacement.
* Manure on belts at existing house kept dryer than BREF recommendations by running belts more frequently. Also recent retrofit of air heaters will maintain general further dryness throughout house. In new houses warm air will be directed onto belts through jets.

Temperature

* Range and limits of temperature variability are computer controlled to meet needs at different times of year and egg laying cycle.
* Draughts minimised by inlet and exhaust systems matching, so pop-holes offer neutral pressure.
* Associated with temperature is humidity. Controlled in existing and proposed houses, high quality insulation prevents condensation.
* Design of inlet and exhaust systems on existing and proposed houses is such that air exchange can take place, critical for flock welfare without undue loss of heat.

Ventilation

* Ventilation on existing and proposed house designed by leading provider of these systems and controlled through central computer and associated sensors.
* Temp and humidity optimised to minimise gas generation through reducing wetness but preventing over-dryness and creation of excessive dust. Prevailing ‘damp’ climate in this part of Cumbria is such that dryness is less of an issue hence the recent retro-fit of space heaters in houses 1a and 1b.

General management

* Floors and walls inspected with a view to immediate repair when houses are empty after depletion and full clean.
* Air pressure control reduces wind blowing in water vapour and causing localised capping. Extra space heating supports this.
* Pop-hole flaps provide canopy by not opening fully reducing rainfall ingress.
* Reduced water brought in by birds through stone scratch area adjacent to pop holes.

BF 2.3.3 Livestock numbers and movements

There is full records of bird numbers, daily mortalities , depletion date and introduction dates plus other key activities required by both regulatory agencies and the egg industry including wholesalers and retailers. The data will also be required for a PPC permit to establish the overall bird occupancy over a year when calculation emissions for national Pollution Inventory returns.

BF 2.3.4 Slurry Spreading and Manure Management Planning (off site)

At present there are no slurry exports to bio-digesters, waste water treatment plants or power stations. These could be a future option but unlikely given the present supply/ demand locally through the recent closure of dairy farms in the vicinity and loss of cattle slurry for field fertilisation.

There are no NVZ areas in the area.

 All farms are thought to have nutrient budgeting plans and this is continually developed throughout the watershed through the Natural England led ‘Catchment Sensitive Farming’ initiative.

Whilst present produced manure is either used on own land or transferred to 3rd party farms, the possibility of balancing delivery requires addressing, if the manure doubles in quantity.

 The proposal is to construct a covered store for dry manure as a storage facility to balance out delivery. This will be built to required standards and there will be no liquid run off given the target 60% to 64% dry matter.

The following table is used at present for manure recipients :-

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Farm** | **Distance from Broxty** | **Acerage (Ha)** | **Previous (average receipt)** | **Storage on site.** |
| Warton Hall Winton | 4km | 80 acres (32 Ha) | annually | Covered shed |
| New Hall, Brough | 3km | 40 acres(16 Ha) | Limited at present. Demand would contribute more | None. Manure applied directly to fields |
| Brough Sowerby | 2 Km  | Potentially 170acres (69 Ha) | occasional | Slurry store  |

In addition, there are 5 No. farms within 4 miles who have retained the farm size but relinquished their dairy herd over the past few years. Consequently they have no alternative source of organic manure but have yet to be approached, given the overall shortfall compared with demand.

Further contingency:- the new site storage offering buffering capacity is the first option along with opportune field on own site. Following that, further options being considered are :-\_

* CHP plants in the area
* Bio-digesters across Cumbria
* Arable farms in North Cumbria
* Power stations.
* The preferred route will always be that which incurs least travel cost and least impact on the environment, eg. milage.

BF 2.3.4 Slurry Spreading and Manure Management Planning (on site)

A manure management plan exists for both Broxty Farm (outside of the permitted site) and Buckles Farm, also owned by the Partnership. Matching land and crop needs through manure and soil analysis is undertaken and appropriate agronomist advice given on application.

 The manure management plan will be reviewed every 4 years. This presently includes records of total and available nitrogen and total phosphorus.

Little manure is applied to bare land as most is on land for grass production and therefore continuous cover.

Only wash-water (approx. 20m3) derived from shed cleaning and then after physical cleaning is spread on land by tanker. Available and appropriate land is available on the Partnership’s farms.(Adverse conditions are avoided).

BF 2.3.5 Waste Exported Off site.

The issue of waste on this FRE farm is low given the efficiencies which are incorporated in the process.

 All feedstuffs are converted to body biomass, eggs and manure which are detailed elsewhere. Waste is therefore limited to other ‘occasional’ circumstances.

There are no waste materials produced which could be considered as ‘hazardous’. Collection and procedures for transport to final destinations are in place for all recyclable materials such as paper, card, plastics and metal.

 The exception is fallen stock which is addressed through a contract with a local registered carrier and disposal company working to their legislative conditions.

BF 2.3.6 Improvement programme.

Consistent with the ‘How to comply’ guidance, this farm will have a mixture of existing and new structures.

 No features have been identified in the existing structures that warrant an improvement plan to date. Houses 1a and 1b were built in 2013 and commissioned in early 2014, the arrangements are consistent with the best practice required through BREF guidance.(published July 2003)