Application for Environmental Permit EPB3.5 (Version 4)

Buckles Farm, Kaber, Kirkby Stephen. Cumbria

Pre Application Ref.EPR/GP3001LP/A001

BF 5 Housing Review

Although not permitted at the moment the existing housing at Broxty ( houses 1a and 1b) were only commissioned in 2014 following discussions and implementation of advice given by both the Environment Agency and Natural England at that time.

In 2014, aviary systems were relatively uncommon although BREF guidance refers to their emerging qualities. Since then major shed builders have fine- tuned performance and are now widely chosen for free range units. During that consultation, the ventilation arrangements were an important consideration given the proximity of the R. Belah SSSI immediately to the east. It was felt that for environmental security reasons; minimising ammonia deposition onto those woods, that the nearest house (1a) should be provided with high velocity roof fans whilst the western end of the building which was planned to have gable end fans directing to the west would be the best option in that locality. This arrangement was agreed and installed.

Not required as BAT at that time was the need to intercept drainage under the scratch area and direct this for treatment by swales (Lightly contaminated water.)

This was also undertaken as a further farm initiative to protect against surface water pollution.

The starting point for a housing review is therefore with a relatively new building complying with both building regulations and BAT criteria.

The review follows the procedure promoted in (*EA Appendix 7 – Undertaking a housing Review Version 3 2012*), which is close to the build date. The review is straight forward , reflecting on just the one building on the future permitted site.

*Reflection on Appendix 3 minimising emissions is reported on separately within the application, Chapter 5.Housing Design – Route to BAT*

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| Conformity to BAT? | **√** |
| Repairs or modifications to further reduce emissions ? | Yes - See Below |
| Identification of improvements needed and viability? | Investigated during 2019 / 20 implementation 2020/21  Commissioning 2021 |
| Referred to Environment Agency | No reference to Environment Agency at this stage as site not regulated under PPC |

* House occasionally suffered from ‘capping’ in isolated areas within the building but adjacent to pop holes. This was due to damp air and low temperatures in these areas which prevented litter always being dry. The problem was only of concern in winter when damp external conditions were more prevalent and exacerbated by the need to reduce the amount of ventilation to keep temperatures within the optimal range.

Decision was taken to introduce 10 No. 100 Kw air heaters to serve the existing house. Principle used is that a conventional radiator system recovers heat from inside the house and transfers to fresh air entering the building, increasing the inside temperature and also reducing humidity.(Similar to Big Dutchman Fumis system)

Cost of single (large unit was prohibitive and therefore a series have been installed. Warmed air is introduced to the whole house reducing risk of damp conditions I all areas.

There is some spare capacity and warm air generated by these units would be transferred to the new unit assist in temperature elevation but introduced directly onto manure belts for ammonia prevention. Because this requires individual ports alongside the manure belts, such a retro-fit is not viable for the existing site at the moment.

Commissioning is likely to be Autumn 2021.

Housing Management – The route to BAT (Follows EA key questions)

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| Slurry Management | Only occurs as wash-water every 55 to 60 weeks at depletion. Infrastructure of sealed reception pit operation with contract cleaners is coordinated by a partner. Small volume of low contamination wash-water generated with sufficient land at all times of year. Supervised fully by one of Partners. |
| Litter | Temperature and humidity computer controlled. New air space heaters will provide additional flexibility in wet cold periods of the year to minimise ammonia generation. |
| Ventilation | Extractor fans routinely serviced. High velocity on house 1a , gable end on House 1b. No issues with their effectiveness Comply with BAT |
| Temperature | Regulated to be within optimal range. Houses well insulated, preventing condensation. |
| General management | Staff all conversant with plant and processes. v. Low turn-over.  Training undertaken on developments, new initiatives and emerging government department initiatives such as BAT. |

Reflection on Possible emission reduction measures.

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| Piped systems | Water Pressure | * All water pumped to header tank within building from where delivery to drinkers is by gravity .ie not pressurised. Computer identifies and alarms when leaks occur. * No need for additional cut off valves beyond operational ones. No liquid feed. * Water additives such as vaccines injected directly into line feeding header tank |
|  | Back siphoning | * Not considered an issue |
|  | Isolation taps and valves | * Fresh water simple system from borehole supply to header tanks passing through UV light for treatment. Shut off valves at Borehole head works and within building. All wash-water generated following depletion, is directed to open channels. No pumping except for suction pumps at tractor / trailer end of operations. |
| Drinkers and feed troughs | Height | * Adjusted when necessary although this is minimal for laying birds |
|  | Shut offs | * Computer linked but also checked daily. Low leak nipple drinkers with larger drip cups are most advanced design. |
|  |  | * Repair and replacement is practiced when necessary. |
|  |  | * Drips caught. discharge onto litter avoided and volume likely to flow (drain away) does not occur |
|  | Feed Troughs Tamper proof | * Not an issue with highly regulated (minimal access into building. |
|  |  | * Emergency cut-outs installed. |
| Manure Management | defaecation | * All internal areas where defaecation mainly occurs is captured by belt system |
|  | Removal from house | * Belts operated at least 2x / week to covered trailers outside with ‘sock’ drop flue |
|  |  | * Houses have DPM under concrete to secure impermeability. |
|  |  | * No. Only one channel / building. This also houses final conveyor belt and doubles as wash- water conduit at house cleaning. Inspected regularly in case attention needed. |
| Ventilation and temperature | Dust Contamination | * Gable- end extracted air goes into recipient tree / bush plantation and onto concrete floor beneath fans. Drainage from concrete pads directed to swale for treatment. * House 1a has high velocity roof fans. Roof water from both existing houses goes to drainage along with scratch areas to existing swale for treatment. |
|  | Insulation | * No. Insulation relatively new and inspected fully at each depletion with a view to repair / replacement. All designed and installed to high quality and thermal capacity. |
|  | Noise. | * No. External recipients at distance but maintenance schedule there to protect workers. |
|  | Humidity and temperature monitoring | * No. Both monitored at locations throughout the house, computer recorded and linked to alarm if outside accepted operational limits |
|  | Vent maintenance and size. | * Size established by house designers at tender stage. * Maintenance of both passive inlet chimneys with aperture adjustments and extraction fans that govern air flow are all on maintenance schedule |
|  | Inlet / vent coordination. | * All computer controlled, integrated and alarmed for both humidity and temperature. |
|  | Air filtration (expelled) | * Expelled air through high velocity roof fans is direct to external atmosphere to height under advice at construction from EA and NE. Gable end fans have louvered flaps to direct flow downwards onto concrete where accumulations are either swept up and disposed of or washed to swales for treatment. Further, gable end fans directed to panted interception tree belt consistent with *‘farmtreestoair’* tool for absorption and metabolism of dust and associated gases. |
|  | Feed composition | * Tailored feed for specific stage is from proprietary manufacturer, delivered to hoppers in sealed system and evacuated dust expelled via cyclone with filter.(feed stuffs-meal, nuts pellets.) |
|  | Litter introduction | * Primarily at start of campaign. Little is added as the addition of dry manure increases with time, but additional ‘top-up’ can be applied at any time. |

In Summary:\_

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| **House** | **Function** | **Is Building management BAT** | **Is Building design BAT** | **Is it identified in Housing improvement Plan** |
| 1a and 1b | Free range gg production Aviary system | BAT **√** | BAT**√** | No require improvements yet identified. |