Broxty Farm. - Free Range Egg Farm:- (PPC Application)

BF. Appendix 19 Dust and bio- Aerosols

Environment Agency advice looks at a 100m distance between the site boundary and the nearest receptors, ie the site farm house.

Appendix 19. should be read alongside measures for reducing odour which has close characteristics.

The distance of the farmhouse to the nearest emission point from the nearest existing unit, served by high velocity roof fans is 170 m and the distance from the furthest existing unit served by gable end fans, approx. 260m. Only the boundary of the site is within 100m. of the farmhouse.

For the nearest unit (1a), all duty and auxiliary fans are roof mounted and for the furthest existing unit, (1b) all gable end mounted and directed to the west, air flow is away from the house.

All other domestic houses and business premises are at greater distances. (predominantly farms).

The high velocity fans deliver exhaust air to height before lateral dispersion and the prevailing wind direction is not likely to deposit dust in the vicinity of the farm house.

The second existing unit, with a gable end fan configuration, directs exhaust at roughly ground level towards the west and the concrete plinth below this captures most dust as the energy for dust transfer is lost quickly outside of the house. (outlets have downwards facing louvres.) The area is drained to a swale for subsequent treatment and there is no evidence of dust being re-suspended.

The proposed site (house 2a and b) is much further away and would be served by gable end fans; again served by a swale for dust capture and treatment and also have designed tree capture planting..

Pop-holes on both existing houses and proposed houses is unlikely to be a source of significant dust; and no bio-aerosol.

In times of extreme heat, auxiliary fans will be deployed on the western gable end to enhance air flow through to maintain cool conditions within the house. These are directed to the west but again will be louvered to direct air flow downwards and will additionally be screened by the tree shelterbelt to both intercept dust and break up linear air flows, preventing dust or aerosols reaching the nearest habitation. No exhaust fans are directed towards any habitation.

The fact that air is vectored out close to ground (house 1b) level and baffled downwards, will reduce the risk of lifting any dust generated to a height and then subsequent deposited at distance; (an issue that can arise with units fitted with high velocity roof fans.) Tree planting, especially the existing planting on the range, will both serve to reduce air velocity in any direction and will additionally serve to absorb and retain particulates. Further, these will enhance over time through maturing and growth. Deposition of any ‘fine material’ (PM10s) will therefore be close to the fan outlets, apart from house 1a.

Dust Creation.

Much of the operational regulation of site conditions within the poultry sheds is concerned with creating the right environment for stock welfare. The aim is to maintain litter at >60% dry matter, this being optimal to prevent wet manure, likely to generate ammonia and potentially cause smell nuisance, whilst preventing it becoming too dry and creating excessive dust.

Most of the dust generated within the houses will be emitted through the fans, with a minimal amount released through pop holes.

Dust will therefore be captured immediately outside of the building on the concrete pad and into the gable end tree cover from routine air emissions. Ground vegetation and trees / shrubs located just beyond the buildings will significantly contribute to dust capture and conveyance to ground level for subsequent adsorption and absorption.(see photo montage) Given the size and orientation of the range it is unlikely that dust will be traceable beyond the range boundary and the range boundary itself is some 90m away from the farm house to the north east.

Dust generation derived from transfer of feed stuffs to silos is avoided by displaced air passing through a cyclone and then an air filter before the air evacuates to atmosphere. The existing silos are located close to the Central Services building.

Bio-aerosols.

As cited above, the climate control facilities ensure that damp conditions inside the houses and therefore potentially emitted, are unlikely to occur during normal operations. The availability of heat will always be available and applied through computer control.

The exception to this is after houses have been cleared of both flock (depletion) and solids from the floor (litter), when the whole internal infrastructure is washed and sterilised before re-populating with pullets. At this stage houses are sometimes ‘misted’ with mild disinfectant for 24 hours as a final sterilisation phase. However this mist is maintained within the building and degraded within the sheds for a period precluding the opportunity for aquatic aerosols to be emitted from the houses.(Doors actively kept closed for this period.)

Mists and bio-aerosols generated during high pressure washing is contained within the building being washed as main house doors are kept closed.

All lightly contaminated surface waters leaving the site are treated through the swales. These are liquids, not bio-aerosols. All water generated though the occasional house washing, (once / 14-15 months) will be collected in a sealed tank. In both cases the creation of aerosols is avoided by preventing turbulence.

Emptying of the wash water tank will be by vacuum tanker and is within a sealed system.

Only the air displaced from the tanker during filling could be classed as generating bio-aerosol but no greater in extent or duration than any conventional tanker operation. Eg compare with the emptying of domestic septic tanks or the frequent use of agricultural tankers in this rural area. Again frequency is less than once / year.

Dispersal of wash water onto farm land outside off the permitted area is not highly agitated and liquid is released passively from the tankers by gravity and without the use of splash plate distribution systems. This occurs after each clean and for a few days only, not a routine exercise. i.e. each house every 65 weeks. This equates approx. 20m3 or two mobile tankers full.

The link between odour and bio-aerosols derived from the existing manure store used exclusively for cattle manure at the moment, will be terminated with the decommissioning of this existing (covered / open sided) store. The proposal is to conclude the cattle side of the business should a second poultry unit be approved (subject of this application.) An option exists to build a new bespoke fully enclosed store for all poultry manure with minimal air release, adjacent to the proposed houses 2a and 2b but this would not be progressed if the system was deemed to add significantly to overall emissions that adversely affected the SSSI. The alternative would be to remove manure immediately to recipient farms off the permitted site. Generation of both aerosols or dust would be very unlikely from this unit.

Relationship of house exhausted air from houses relative to Farm house and R. Bela SSSI.

Replacement manure storage building

West

East

Proposed ‘normal’ exhausted air from gable end into tree’d embankment

R. Belah and pastures

630mmm

390mm

310mm

230m

Broxty farmstead

House 2(a & b)

House 1 (b)

House 1 (a)

Existing cattle manure store

Fans may offer immediate 90% drop within 50 m and natural ventilation 80% within 50m.

260m

170m

extraction fans