Application for Environmental Permit EPB3.5 (Version 4)

Buckles Farm, Kaber, Kirkby Stephen. Cumbria

Pre Application Ref.EPR/GP3001LP/A001

BF Appendix 4 Manure Management Plan

4.1 Background

There is wide acceptance that the balance of nutrients in dry poultry manure is often close to the optimal following field analysis and interpretation by local agronomic services.

Local farms have seen a closure of 5 or more dairy farms in recent years and there is already a greater demand that can be supplied. Providing the partners own needs with those of neighbouring farms is likely to remain over- subscribed into the future but consideration is still being given to contingency outlets.

 The construction of a Manure store with a 4 month capacity (cf. little stored in the past) means that manure will be more readily available at the right time, even if neighbouring farms have poor storage facilities. This will additionally manifest itself in more secure surface water quality (generally) which remains an issue in a predominantly agricultural watershed. (See catchment sensitive Farming initiatives administered by Natural England and implemented by Eden Rivers Trust for the R. Eden catchment.)

* Future weekly production will be approx. 4 No. trailers @ 7.5 tonnes wet weight / trailer = 30 tonnes and approx. 20-25 m3.Equivalent to 1560 tonnes / year or 520T/ 4 months. 1300 m3/yr =433m3/ 4months
* Proposed manure store will require to be approx. 30m long x 15m wide assuming 1m deep\* = 450m3 capacity. In fact, filling will be by trailer from house 1a and1b but directly by conveyor from houses 2a and 2b.. This allows for storage in an “A” shaped pile, considered optimal for limiting ammonia release. The store will be covered (roofed) and waterproof.
* Manure will be generated continually throughout the year apart from short periods when there are no birds on site (depletion). Present outlet farms have a variety of storage arrangements and one receives and applies directly so additional capacity beyond the new proposed store is available for planned application.
* The following table identifies present recipients but as yet excludes any further ones such as recently closed dairy farms.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Farm (name)** | **Owner** | **Distance from Broxty** | **Manure storage** | **Area (Ha)****(Present )** | **Projected need.(@8T/ha. – single application)** |  **Site plan in place** |
| 1 | Broxty Farm(total area 68Ha) | Messrs Buckle  | 0 Km | X | 27 | 216 T | **√** |
| 2 | Buckles Farm(total area 140 Ha.) | Messrs Buckle | 1 km | X\* | 51 | 408 | **√** |
| 3 | Wharton Hall. Land at Winton | ---------- | 4Km | **√** | 32 | 256 | ? |
| 4 | Trainriggs Farm. Land at Brough Sowerby | ----------- | 4Km | x | 69 | 552 | ? |
| 5 | New Hall Farm land at Brough Sowerby | ----------- | 3.5km | ? | 16 | 128 | ? |
| 6 | Rented land to Buckles | Various | Within 3Km | none | 61 | 488 | **√** |
|  | Total |  |  |  | 283 | 2048 |  |

* Future store planned
* 4 months’ capacity at Broxty may be required.
* Distribution Spreader will be used only at Broxty Farm, Buckles Farm and rented land. Remainder will be transferred to neighbouring farms. Spreader fitted with low projection baffles to minimise aerial contact.
* Nominal value of 46% DM is given for ‘Aviary free range’ with no added heat. In future volume will go down but nutrient availability will remain. Target to be 60% to 64% DM.
* Contingency. Breakdown of tractor, and spreader limited. Routine arrangement with local service provider (Kirkby Stephen with alternative services in Appleby and Penrith.(have second tractor and spreader.)
* Rainfall not requiring contingency as all manure is generated and can be stored in dry conditions. Available personnel also covered with existing farm contingencies. All land identified is permanently available except for 15 Ha at ‘Laurence’s’ which has steep incline to watercourse. This area is not critical to operations.
* Proposal is to store as conical pile to reduce S.A. / Vol ratio.

A4.2 Calculations Manure production

‘A’. Assume (SAC Figure) 1000 birds producing 25T / yr. This equates to 1600 T for a 64,000 bird unit. =31 T/ week production

 Broxty present manure produced =20T / week at moment will go to 40 tonnes / week . However this is fig. prior to new heat exchangers or proposed extension so volume and weight will be of drier manure in future. 40 T may well approach 30T/ week.(1560T)

Imported manure =0

Nominal future application at moment based on 16T/ Ha would require 97.5ha.(Broxty and Buckles Farms jointly have 208 Ha)

‘B’ 1000 laying hens (air dried) , Moisture content 30% = 49l / day

 64,000 = 21,952 litres / week = 22m3/ week. At density of 1.4 = 30.8 T / week

 Bedding @1.0 kg/ bird / yr =64,000 kg / yr or 1.2 tonne / week.

Total =32 tonnes / week (cf 31T/ week in calc a above)

A4.3 Plan.

16T / Ha is a commonly used application rate although DM and nutrient analysis along with crop need makes the figure very variable.

 However @ 16 T / Ha/ yr will be a good starting point

Total Nitrogen in manure , (roughly 2.87% of DM) will work initially o 250 Kg / ha / yr

 This would equate for a need of 183 Ha in total .

Messrs Buckle have a manure management plan in place for their Broxty and Buckles Farms using the 2003 DEFRA process and associated Guidelines. The plan is a requirement of the Farm Assurance Scheme (Red tractor) which has recently been reviewed and passed.

 This identified primarily those areas on the farm where manure could be spread ‘at any time’, although it was recognised that to maximise manure value, autumn and early winter should be avoided when nitrogen uptake is lowest. The proposed purpose- built manure store will offer that buffering capacity. In fact there is only 15 Ha of the 139 Ha on their own (and rented) land that is restricted in application. (Worst case scenario)

 Since commissioning the existing poultry unit in 2013, here has not been an issue with either storage or use either on their own farms of supplementing other farms locally. Third party farms have provided their own storage.

The potential to duplicate the poultry unit now, and seek a PPC permit through the Environment Agency, will require Messrs Buckle to engage in more detailed planning to map out future manure usage more formally.

 A backstop option is always there to use the manure for either power generation or digesters (which do occur locally). However excess haulage needs to be avoided and maximum sustainable usage is as a fertiliser.

 Further, this does not fit with the partnership ethos of reducing their carbon footprint and utilising this readily available (balanced) fertiliser locally in a way that maximises the manurial value whilst also addressing local (R. Eden) water quality issues by helping improve soil management and reduce run off locally. Field and soil analysis to date has identified good matches between field needs and manure composition.

 There are believed to be at least 5 local farms which have *recently* terminated their milk businesses and where soil fertilisation / conditioning will require alternative sources rather that rely on introduction of inorganic fertiliser.

For some time the R. Eden catchment has been recognised as suffering from agricultural problems and the Eden Rivers Trust works through Natural England to provide advice and support farmers resolve infrastructure and process shortfalls where these are identified.

Early communications with Natural England has identified some key points that should be pursued to join up the future manure availability to watershed improvement.

The following 5 point plan will be pursued following further discussions with Natural England’s CSFO with a view to generating a plan to support an extended poultry unit at Broxty Farm.

* Further review of available land to identify not only ‘green’ field for use at any time but also those for targeted manure application, (orange, yellow and white fields) on Broxty and Buckles Farms. (likely to be very limited)
* Further discussions with Local N.E. Catchment Sensitive Farming Officer (CSFO) with a view to developing more robust plan.
* Tentative discussions by CSFO with potential recipient farmers to introduce new or expanded farm waste / manure management / nutrient budgeting management plans.
* Development of contingency plans for emergency receipt of manure in conjunction with the farm buffering capacity (store).
* Identify potential market of arable farmers (Reflecting on transport costs and carbon accounting.)