

Highfield Farm, Green Lane, Halton. Wrexham, LL14 5NR

Location X- 329768 , Y- 338751

Planning Ref P/2022 /0461



ODOUR MANAGEMENT PLAN & MEASURES TO MINIMISE THE EFFECT OF ODOUR FROM THE PROPOSED SLURRY STORE

It is proposed to construct a circular slurry store to take manure from the cattle housed in the cubicle building. The size of the store is based on the capacity of the cubicle building which can house around 76 cattle. The current manure system is based on a ramp with slurry spreaders removing material on a daily basis. This system is outdated and will not meet the requirements under the following regulations -

- The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021.
- The Code of Good Agricultural Practice (COGAP) or the protection of Water also known as The Water Code.
- The SSAFO Regulations - The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil Regulations)

To meet these regulations especially the Water Resources Regulations introduced in 2021, Highfield Farm must increase slurry storage capacity to a minimum of five months. A slurry tower is proposed which will be located in close proximity to the existing farm buildings. The proposed site is already used to scrape slurry into a spreader via the existing ramp and the area also has storage for some slurry and FYM. Table 1 shows the volumes of slurry likely to be produced over 6 months from 76 dairy heifers. Please note that there will be no increase in cattle numbers kept and the volume of slurry produced will remain similar.

Table 1

A. Slurry	Source							Destination
		1 Month	48 Hrs	Months	Months	Months	Months	Slurry
	Nos	Per hd		1	4	5	6	Store
Youngstock (Av 20 L/day)	76	1.20	6.1	91.2	365	456	547	547
B. Rainfall on Fouled Yards			M5	Months	Months	Months	Months	
	Plan	Area	48 Hours	1.0	4.0	5.0	6.0	Destination
Average rainfall (mm's)	Ref	est	65.0	110.0	440.0	550.0	660.0	Slurry
		m2	m3	m3	m3	m3	m3	m3
Feed and open yard area (not tower)		216	14	24	95	119	143	143
Slurry Tower		177	11	19	78	97	117	117
Reception Pit		15	1	2	7	8	10	10
Total Fouled Rainfall		393	26	43	173	216	259	259
Total Slurry & Dirty Water			32	134	538	672	806	806
C. Storage Available/Proposed		Rainfall	D	W	Depth	Capacity	freeboard	Average per month
		m2	m	m	m	m3	add	Slurry
Slurry Tower		177	15.0		4.50	795	300mm	m3
Reception Pit		15	6.0	2.5	2.50	38	to tanks etc	134
Capacity - effective capacity after allowing freeboard - 750mm for lagoons 300mm solids structures & towers								Storage Available
Lagoon capacity is calculated from AHDB 'Slurry Wizard'								Mths
Total Storage Available m3						832		6.19

Fig 1 below shows the location of the tower relative to the existing buildings.
(More detailed drawings are included with the planning documentation)

Fig 1



Effect of Proposals on Odour

The proposed store is unlikely to create any additional odour nuisance as no additional slurry will be produced as a consequence of this proposal. This proposal relates to a more effective way of managing the same amount of slurry on site. As slurry is already produced on the farm and stored next to the farm buildings the proposed slurry tower can only have a minimal effect on odour.

Currently slurry is put into a spreader and then spread on fields on a weekly basis. If weather conditions do not allow spreading the slurry is retained within the midden.

New Store Fill Method

Slurry will be scraped from the buildings into a channel (covered) and then will be pumped from a covered reception pit into the tower. The filling process will be under the surface of the slurry reducing odour caused by agitation created by the filling process.

The proposed infill method will reduce odour as much as possible when filling. Special attention will be paid to retaining the crusts on the store by limiting any agitation which will only be required when the store is emptied.

Adding additional straw to promote a better crust formation is an alternative strategy to be adopted if further odour reduction measures are required and / or verified odour complaints are received.

(Ref DEFRA COGAP for reduction of ammonia emissions - Where the fibre content of the cattle or pig slurry is high and it is not necessary to regularly mix and spread the slurry, allowing the slurry to develop a natural crust can reduce ammonia emissions during storage by up to 40%.)

The slurry tower will have a natural crust on top of the slurry which will remain in place – this will reduce any odour from the store.

Time of Filling

The proposed system will operate on a daily basis with the slurry pumped from the reception pit to the store. The reception pit is covered and with the proposals to fill below the surface will reduce odour as much as possible.

The regulations require two days of slurry storage to be available to meet the SSAFO regulations and this leaves little room for manoeuvre. However, the relatively small amounts to be transferred on a daily basis will minimise agitation and should not increase odour which will generally be highest when the store is emptied.

Pumping from the reception pit to the stores.

Pumping is likely to occur on a daily basis and will be restricted to 40 minutes per day

Time restrictions will be -

Weekdays Mon-Fri between the hours of 8am and 6pm.

Saturdays between 9am and 1pm.

Sundays and Public Holidays – pumping will be avoided if possible on these days unless absolutely necessary and within the 40 minute time allowance.

Emptying and Spreading

By limiting stirring and agitation, the main odour source will occur when the store is emptied. The slurry tower will be filled as described and then left until it is appropriate to empty and spread. There will be around 25 weeks storage available in the store.

The main high odour events will occur when the stores are emptied. The following actions will reduce odour as much as possible.

- a) The stores will only be stirred when absolutely necessary and only when emptying.
- b) If practical, the stores will only be emptied when weather conditions are cool and wind direction is from the south west directing any odour away from the closest dwellings.
- c) No spreading will occur at weekends and holidays.
- d) It is recognised that there will be some odour occurring when spreading and therefore the farm will manage slurry applications as quickly as possible and as infrequently as possible.

The increased storage will mean that the farm will only need to spread 2-3 times per year. This is to allow the correct applications of nutrients to crops in Autumn, Spring and Summer e.g. seed bed preparation, after silaging and applications to grassland.

In future, the store will allow the slurry to be spread using a 'Trailing Shoe' spreader which reduces emissions. Currently spreading is carried out with an open manure spreader. As this occurs on a regular basis the new system will reduce odour.

Fig 3 shows that a trailing shoe fitted to the tanker can reduce ammonia by 30-60% at moderate cost.

Fig 3 Spreading Equipment Source - DEFRA COGAP for reduction of ammonia emissions

	Surface broadcast	Trailing hose (low emission)	Trailing shoe (low emission)	Shallow injector (low emission)	Deep injector (low emission)
Typical range of dry matter	Up to 12%	Up to 9%	Up to 6%	Up to 6%	Up to 6%
Requires separation or chopping	No	Yes (if over 6% DM)	Yes	Yes	Yes
Relative work rate	→→→→	→→→	→→→	→→	→
Uniformity across spread width	✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Ease of bout matching	✓	✓✓✓	✓✓✓	✓✓✓	✓✓✓
Crop damage	Moderate	Low	Low	Moderate	High
Relative odour	High	Moderate	Low	Low	Very low
Relative ammonia reduction	0%	30-35%	30-60%	70-80%	90%
Capital cost	£	££	£££	£££	££££

Animal Diets

Much work and research is being carried out on the dietary needs of dairy cows and the effect diet has on ammonia emissions. Although we cannot include any specific recommendations as to what to feed, reductions in certain feeds will also reduce ammonia. The farm will adopt best practice in feeding to reduce ammonia emissions and odour.

Odour Complaint Procedures.

Should a complaint occur, the following procedure will be followed.

- a) Any odour complaint received will be dealt with by the owners of the farm.
- b) If a complaint is made, the form included (see below) will be completed and this will be available for inspection by Wrexham Environmental Health. (Or any other relevant party)
- c) Information will normally be collected by visiting the complainant, although in some cases, contact may be made by telephone.
- d) After details of the complaint have been compiled, the cause(s) will be investigated, with reference to:
 - 1) The activities taking place on the farm at the time.
 - 2) The timing of the complaint and whether weekday, weekend etc.
 - 3) The weather conditions at the time.
 - 4) The likely reasons for the complaint will be added to the form and the complainant will be contacted as appropriate.
 - 5) The feasibility of making changes to the activities responsible for the complaint will be considered. If changes are made, the Odour Management Plan will be amended accordingly.

Will Phillips

P&L AgriConsulting Ltd

Fields Farm Offices, Alkington, Whitchurch, Shropshire, SY13 3NH

Mob 07939 474838

w.phillips@pl-agriconsulting.co.uk

www.pl-agriconsulting.com

