
Manure Management System

**Land at Henfryn Farm
Groes
Denbigh
LL16 5RU**

**Erection of a free-range egg
production unit including silos
and associated works.**

R T & A M Ellis

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Manure Management Plan

Introduction to Manure Management Plans

Based on information provided by the farmer, the manure management plan fulfils the following objectives:

- From farm size, cropping and livestock numbers, it calculates if the farmer is NVZ compliant – with an average load of 170kg N/ha
- The manure management plan also provides a template for the farmer to record the actual type, quantity and date of organic manure applications.
- The plan does not calculate storage requirements.
- The plan does not constitute a recommendation for the application of organic manures.

Spreading of organic manures can pose a risk of nitrogen getting into surface water via run-off. This report provides mitigation measures to limit this risk in line with The Water Resources (Control of Agricultural Pollution) (Wales) 2021.

Description

The farm business extends to 2,000 acres of owner occupied land and 170 acres of that is located at Henfryn Farm. The farm currently operates a mixed system with 32,000 hens proposed. The applicants currently buy in fertiliser to spread on the land together with some poultry manure.

Livestock type	Number of stock units (Step 1)	Total N excreted by 1 stock unit (kg/year) ¹	Total nitrogen
	(a)	(b)	(a x b)
1 Dairy cow, (over 9000 litre milk yield)		115	
1 Dairy cow, (6000 to 9000 litre milk yield)		101	
1 Dairy cow, (up to 6000 litre milk yield)		77	
1 Dairy heifer replacement, 13 months to first calf	200	61	12,200
1 Dairy heifer replacement, 3 to 13 months	200	35	7,000
1 Beef suckler cow ² (over 500 kg)		83	
1 Beef suckler cow ² (up to 500 kg)		61	
1 Steer/Heifer for slaughter		50	
1 Steer/Heifer, 13 to 25 months		50	
1 Steer/Heifer, 3 to 13 months		33	
1 Bull beef, 3 months and over		54	
1 Bull for breeding, over 25 months		48	
1 Bull for breeding, 3 to 25 months		50	
1 Calf, up to 3 months		8.4	
1 Sheep up to 60 kg (inc lamb to 6 months where applicable)		7.6	
1 Sheep over 60 kg (inc lamb to 6 months where applicable)		11.9	
1 Lamb (from 6 months up to 9 months)		2.0	
1 Lamb/Hogg (from 9 months old to first lambing, tupping or slaughter)		1.4	
1 Goat		15	
1 Breeding deer		15.2	
1 Deer (other)		12	
1 Horse		21	
Total nitrogen produced by grazing livestock (kg) year ¹			(A)

¹ includes an allowance for N losses from livestock housing and manure storage

² Suckler Cow: includes calf up to weaning age

19,200.

Grazing for 6 months.

$$19,200 \div 2 = \underline{\underline{9,600}}$$

Figure 1: Grazing livestock Nitrogen output

Livestock type	% occupancy	No. of animal places	Total N excreted by 1 stock unit (kg/year) ⁽¹⁾	Total nitrogen
		(a)	(b)	(a x b)
1000 Laying chickens (caged) over 17 weeks	97		400	
1000 Laying chickens (free range) ⁽²⁾ over 17 weeks	97	32	530	16,960
1000 Broiler chickens (table)	85		330	
1000 Laying chickens up to 17 weeks	89		210	
1000 Broiler chickens (breeder) up to 25 weeks	92		290	
1000 Broiler chickens (breeder) 25 weeks and over	95		700	
1000 Turkeys (male)	90		1230	
1000 Turkeys (female)	88		910	
1000 Ducks	83		750	
1 Ostrich	100		1.4	
1 Sow place (including litter up to 7 kg) fed on a diet supplemented with synthetic amino acids	100		16	
1 Sow place (including litter up to 7 kg) fed on a diet without synthetic amino acids	100		18	
1 Breeding boar 66 kg to 150 kg	100		12	
1 Breeding boar over 150 kg	100		17.5	
1 Weaner place (7 to 13 kg)	71		1	
1 Weaner place (13 to 31 kg)	82		4.2	
1 Grower place (31 to 66 kg) (dry fed)	88		7.7	
1 Grower place (31 to 66 kg) (liquid fed)	88		7.7	
1 Finisher place (66 kg to slaughter) (dry fed)	86		10.6	
1 Finisher place (66 kg to slaughter) (liquid fed)	86		10.6	
1 Maiden gilt place	80		11.1	
Total nitrogen excreted by non-grazing livestock (kg) →				(B)

16,960

⁽¹⁾ N output in manures and excreta output is per poultry place. Includes an allowance for N losses from poultry housing and manure store.

⁽²⁾ 80% of excreta is deposited in the building (assumed).

Figure 2: Non-grazing livestock Nitrogen output

Total area from (a) above		Nitrogen loading limit for livestock manure		Carry this figure forward to Table 7, box (g) in Section 2 of this booklet
159.12	X170	=	27050.4 Kg →	

Figure 3: Total value of Nitrogen for land owned by R T & A M Ellis

Total N produced by grazing livestock (A from Step 2)	(c) 9200
Total N produced by non-grazing livestock (B from Step 3)	(d) 16960
Total N content of imported livestock manure (C from Step 4), Note this will be a minus figure if exporting	(e)
Total N from livestock manure (c + d + e)	(f) 26560
Farm loading value (from Table 2)	(g) 27050.4

Figure 1: Total Organic Fertiliser Nitrogen for Farm

As the ‘Total N from livestock manure’ is less than the ‘Farm loading value’ the farm complies with 170kg N/ha/yr.

All of the manure produced will be used on land owned by RT & A M Ellis.

Phosphate Produced

Based upon the 20% ranging of the birds, the phosphate deposits to the 40 acre (16.18 ha) range will be 2,496kg P, which is the equivalent of 154.2kg P/ha. No other inorganic fertilisers are brought onto the farm.

Storage of Manure

All solid manure produced within the poultry unit will be removed every four to five days and spread directly onto land in ownership of the applicant.

“Dirty” Yard Areas

The “dirty” yard areas on the farm will be kept to a minimum. This is due to the manure being contained in the poultry unit and removed every four days together with the hardcore area to the front of the poultry unit. The farm business will require all areas to be clean outside the building as they will be producing food products within the unit.

The proposal will incorporate the installation of a dirty water tank adjacent to the poultry unit. The wastewater tank will be built in compliance with The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021. The tank to be installed will be 1,000 gallons.

Contingency Plan

There are a number of covered areas on the farm to allow for storing any manure, slurry and dirty water produced at times when spreading may not be possible e.g. due to wet, waterlogged or frozen conditions. This is to ensure manures and slurry are spread at appropriate times to prevent pollution and maximise uptake of nutrients for crop growth.

Contingency will be in place for storing of wash water during and after disease outbreak. Any contaminated wash water will be stored in containers separate from other manures, and will be disposed of by a specialist contractor licensed to deal with such wastes.

Spreading of Manures

Areas on which solid manures and slurry should never be spread are:

Ditches and watercourses:

- Within at least 10 metres (11 yards) of either side of any watercourse including ditches and piped ditches. This will avoid direct spreading into the watercourse and also reduce the risk of run-off reaching the watercourse.

Other non-spreading (red) areas:

- Within at least 50 metres (55 yards) of any spring, well, borehole or reservoir that supplies water for human consumption or farm dairies.
- Very steep slopes where run-off is a high risk throughout the year.
- Any areas where you may not be allowed to spread for reasons such as a tenancy agreement, an abatement notice due to smell, set-aside land, Sites of Special Scientific Interest (SSSIs) or Environmentally Sensitive Areas (ESAs).
- The surface is rocky or uneven so that your equipment cannot be used effectively or safely.

Application Methods

Manures will be stored and spread in accordance with The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021.

Manures will be stored in field stores and manure heaps at Henfryn Farm on pasture ground and will be densely packed with an 'A' shaped profile.

- Manure heaps will be well away from water courses, drainage schemes and ditches.

Manure will be spread under suitable conditions

- Wind direction will be chosen to be blowing with prevailing direction from the west which will blow any odours away from the closest dwellings.
- The ground to receive the manure will not be water logged or frozen.
- Spreading will be done at least 10 metres away from any water courses or ditches
- There is a covered concrete pad at Henfryn Farm that can be used for emergency storage when conditions are not suitable to store manure on the fields. This shed has a dirty water system and has an impermeable base the shed used to be used for wintering cattle.
- Manure will be incorporated in the soil within 24 hours of application, where this is possible due to conditions.

Manure Spreading Plan

Manure will be spread according to the annual cropping plan.

Manure will be tested and analysed on a regular basis so that quantities applied will mean that applications will concur with crop requirements as laid out in DEFRA document RB209.

The birds within the free-range unit will graze the designated land in a rotational field system. The birds will step out of the building through the pop holes provided and onto a veranda, which shall ensure that the ground is not poached and compacted by the birds. The veranda shall also ensure that the feet of the birds are cleaned prior to entering the building. The birds will be then directed to those fields available for grazing in rotation to prevent over stocking of the ground and ensure the fertility of soil. Good pasture management is essential, and it is paramount the problems of parasitic intestinal worms and coccidian oocysts are avoided.

The maps below show watercourses & boreholes are surrounded with no spread zones in red, orange areas are medium risk meaning spreading should be avoided or carefully managed. Manure spreading areas are shown in green.

Thornton Le Moor, CH2 4JF

There are a number of watercourses, ditches through the Ellis family-controlled land. There is a no spread zone around each 10 metres of these. In addition, a further medium risk zone has been placed around this 10m buffer zone.

Henfryn Farm, Groes, DENBIGH, Conwy LL16 5RU

The land surrounding Henfryn Farm controlled by the Ellis family consists of the proposed poultry unit and poultry ranging area which will not be spread on. In addition to this there is an Ancient Woodland to the south-west of Henfryn Farm, therefore we have selected a medium risk zone on the land surrounding this.

RISK ASSESSMENT

Thornton Le Moor, CH2 4JF

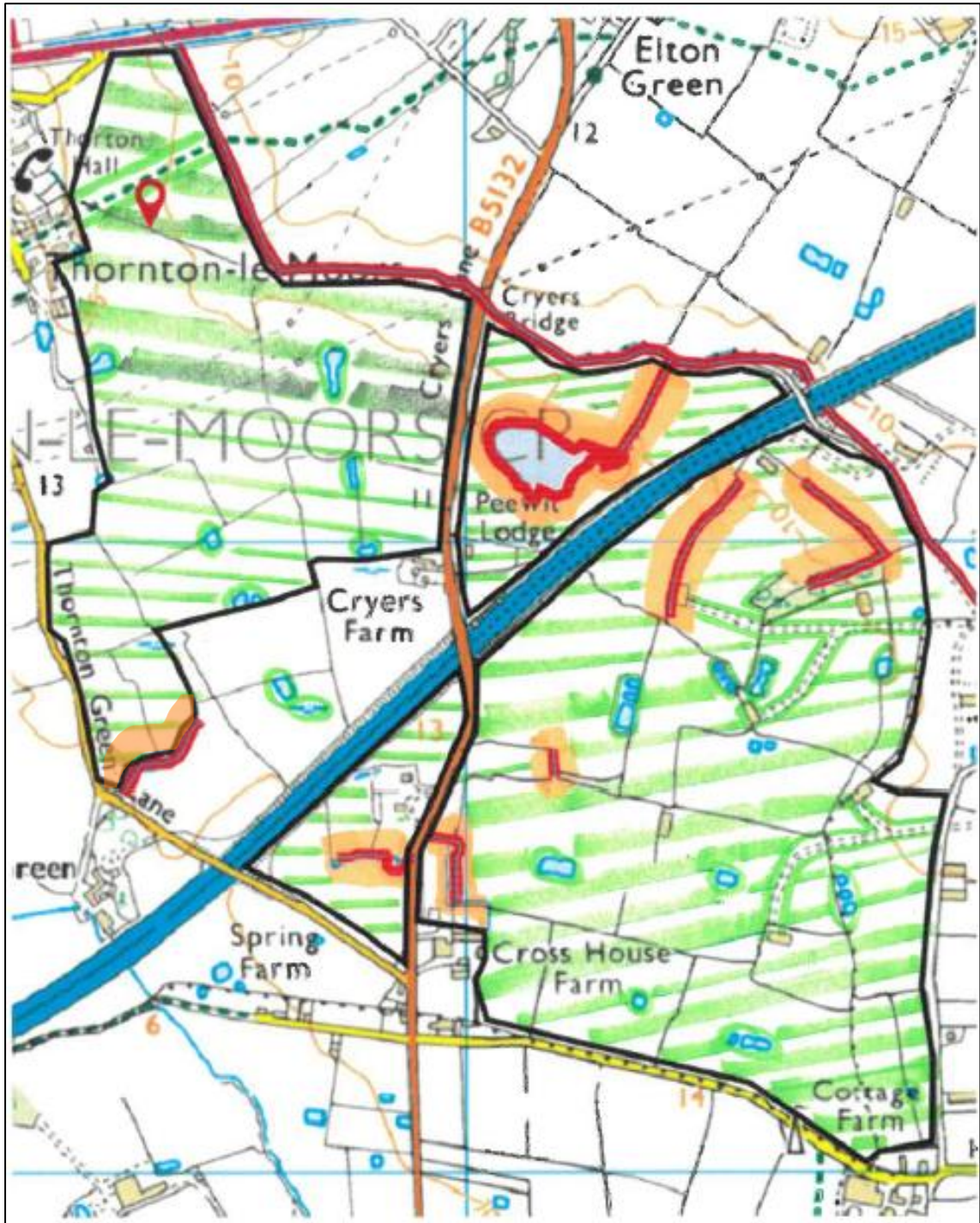


Figure 2: Thornton Le Moor, CH2 4JF

Henfryn Farm, Groes, DENBIGH, Conwy LL16 5RU

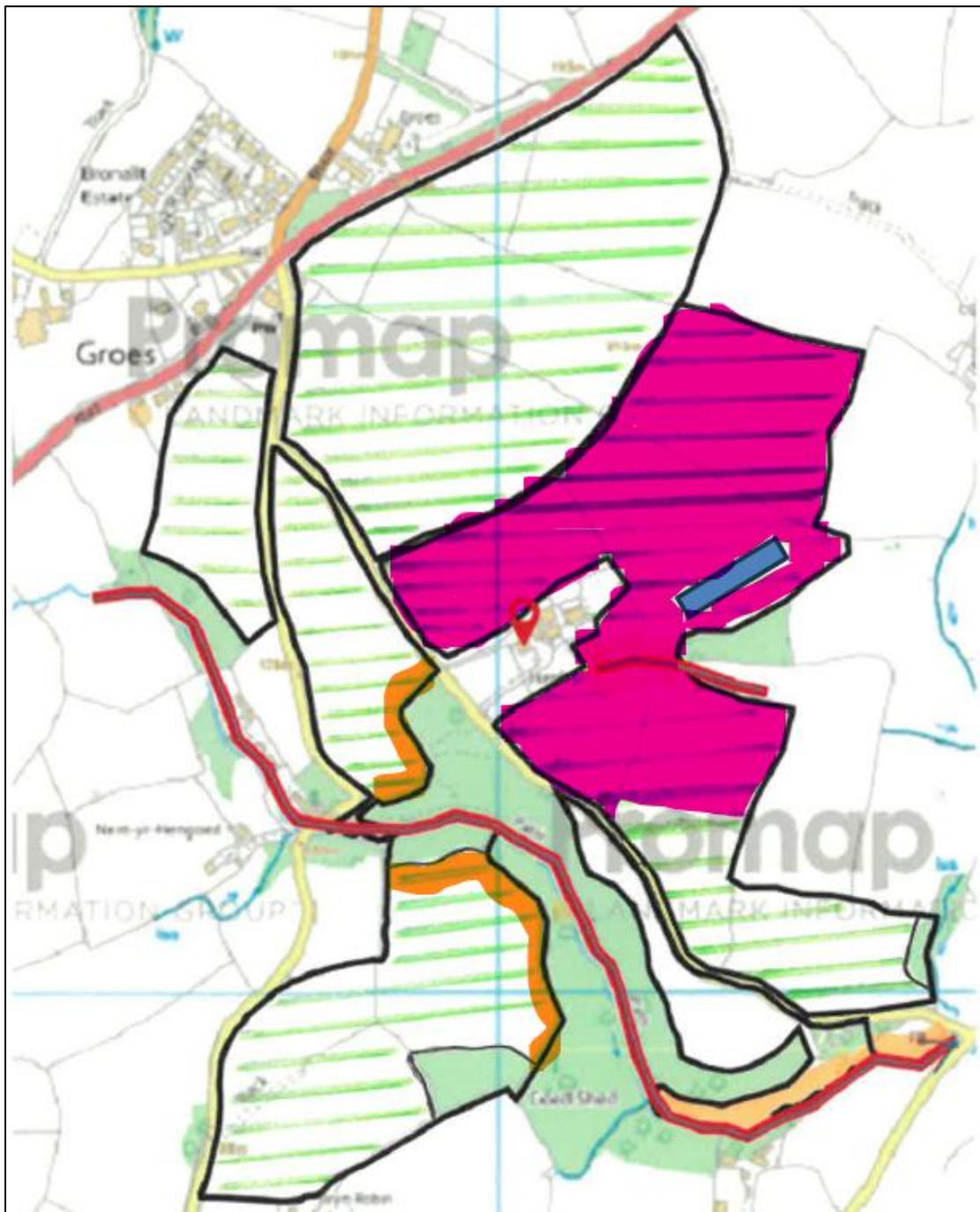


Figure 3: Henfryn Farm, Groes, DENBIGH, Conwy, LL16 5RU