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Manure Management Plan

Assessment of both existing Manure Management Policy and the future Policy including the proposed 16,000 bird Free Range Egg Laying Poultry unit at Glanmyddyfi

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Llanfynydd
Carmarthen
SA32 7TG

Report Prepared by **Stuart Perry**

Signed: **Date:** 20th December 2017

Contents

Appendices

1. Introduction

1.1 Objectives of this Report

The purpose of this report is to:

1.1.1 Assess the total Nitrogen production on the holding once the proposed 16,000 bird unit at Glanmyddyfi is in-place

1.1.2 Assess the proposed strategy that will ensure Livestock Manure Nitrogen Capacity of the farm does not exceed the COGAP recommended voluntary limit of 250kg N per hectare, and ideally stays within 170kg N/ha. The lower limit would help build resilience in case the area should be designated as a Nitrate Vulnerable Zone (NVZ) at some time in the future.

1.1.3 Assess the Spreadable Organic Manure Capacity of the farm against a target maximum 250kg N/ha from livestock manure during the housed period in line with Glastir Grant recommendations. This is **not a legal requirement** but could be considered as a measure of good farming practice.

1.1.4 Assess the slurry storage capacity of the existing farm infrastructure in order to determine what capacity the farm has for storage of poultry manure on concrete yards or in the slurry store as a potential backup for the preferred method of storage in temporary field-heaps in line with COGAP recommendations.

1.1.5 Define the methodology for manure spreading and manure storage to assist with the determination of Air Quality assessment.

1.1.6 Define the methodology involved with end-of-cycle cleaning and sterilisation of the poultry unit.

1.2 Disclaimer

This report is prepared from information supplied by the farming client. The report is prepared in good faith and every effort has been made to ensure accuracy, however AgriPlan Cymru cannot accept liability for errors and omissions. Responsibility for actions taken lies with the client. Professional advice and statutory advice should be taken as appropriate.

2. Summary

2.1 The farm business intends to erect a building to accommodate 16,000 free-range egg-laying hens at Glanmyddyfi, Pentrefelin, Llandeilo.

2.2 This Manure Management Plan assesses whether the proposed unit will conform to the recommendations of the Code of Good Agricultural Practice for the Protection of Water, Soil and Air for Wales (COGAP).

2.3 The farm is not within an area designated as a Nitrate Vulnerable Zone (NVZ), nor does it partake in a Glastir Grant scheme, but nevertheless it is worth assessing the proposals against these tighter regulations.

2.4 The storage of manures is regulated by the "SSAFO regulations" - The Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (Wales) Regulation 2010.

2.5 The farm carries a herd of 50 suckler cows and followers, a flock of 220 ewes & ewelambs, and a 16,000 free-range laying hens.

2.6 Slurry, Farm Yard Manure, and silage effluent is currently contained within a structure (earth-banked concrete-floored slurry lagoon) and in a manner compliant with SSAFO regulations and in line with COGAP recommendations.

2.7 Storage of chicken manure to date has been, and will continue to be, in temporary field heaps covered with an impermeable membrane in line with COGAP.

2.8 The existing slurry store and adjacent concrete yards could provide temporary additional storage of chicken manure should this be required.

2.9 Some 50% of the current manure production from the free-range hen building is "exported" (i.e. sold to local farmers and hence not spread on land occupied by TJ & EE Davies). There is a waiting list of farmers wishing to import chicken manure from the existing unit.

2.10 This report assesses the nutrient content of organic livestock manures using the latest data provided in the May 2017 revised Nutrient Management Guide (RB209) that updates the earlier Fertiliser Manual.

2.11 The current loading of livestock manure produced on the holding is 109kg Nitrogen/hectare/year (kg/N/year) (see Appendix 2). The COGAP recommended limit is 250kgN/ha/year and so the farm is well within this recommended limit. The farm is not restricted by a NVZ designated area, but nonetheless the manure loading is also well within the NVZ lower limit of 170kgN/ha/year.

2.12 If 50% of the current poultry manure production were not exported, the farm would still be within recommendations since loading would still only be 146kgN/ha/year, against the recommended 250kgN/ha/year limit.

2.13 The proposal is to erect a building to accommodate an additional 16,000 laying hens (free-range). All (100%) of the manure produced by the birds inside this shed will be exported (i.e. sold to local farmers and not spread on land occupied by TJ & EE Davies). Hence the nitrogen loading from livestock manures will remain at 109kgN/ha/year (see appendix 3), and hence continue to be well within recommendations and regulations.

2.14 Notwithstanding the expectation that 100% of manure from the new unit will be exported, this report shows that if none of the additional manure were actually exported then the loading would be 183kgN/ha/year and thus still remain within the COGAP recommended limit of 250kgN/ha/year. (see Appendix 4a). This is provided that 50% of the manure from the existing 16,000 bird unit continues to be exported.

2.15 Furthermore, Appendix 4 shows that if none of the poultry manure from either the existing or the proposed poultry units were exported, then the Nitrogen loading for the farm would still only reach 220kgN/ha/year, and thus still be within the 250kgN/ha/year recommended limit.

2.16 The former Glastir grants requirement was that the limit of spreadable organic manures produced during the housing period should be 250kgN/ha/field/year. To achieve this the farm needs to have 17.92ha of land identified as suitable for spreading of organic livestock manures. The Manure Management plan identifies that there are 64ha of land on the farm (excluding the fields at Glanmyddyfi, Pentrefelin – see Appendix 6) suitable for spreading and hence the business is well within the former Glastir grants requirements.

2.17 In summary, both the existing stocking and the proposed stocking & management conform to all the recommendations of COGAP, the requirements of SSAFO, and the additional voluntary targets of NVZ and Glastir grants.

2.18 Both the current and future poultry manure storage area is sited at a minimum of 6.2km from the proposed new poultry unit (i.e. sited on owned farmland at Maes yr Haidd, Llanfynydd).

2.19 Similarly, poultry manure (present and future) will be spread on land at Maes yr Haidd at 6.2km to 7.3km from the proposed new poultry unit.

2.20 Cattle slurry and sheep & cattle manure are stored 4.86km from the proposed site (i.e. at Llys y Nant, Llanfynydd).

2.21 Cattle and sheep manures are currently normally spread at Llys y Nant, although they are sometimes transported and spread at Glanmyddyfi, Pentrefelin for agricultural benefit of the fields. In the future cattle and sheep manures will no longer be spread at Glanmyddyfi, Pentrefelin.

3. Resources

3.1 The farm

3.1.1 There are three separate blocks of land:

1) Llys y Nant, Llanfynydd – 53ha – Grazing & silage - buildings include cattle housing, sheep housing, slurry store, free-range egg poultry unit for 16,000 birds
2) Glanmyddyfi, Pentrefelin, Llandeilo – 16ha –grazing & silage - proposed new 16,000 egg poultry unit
3) Maes yr Haidd, Llanfynydd – 61ha – grazing & silage – no buildings

3.1.2 Total grassland area excluding houses, buildings, tracks, woodland, habitat areas etc amounts to 118.22ha. No crops are grown.

3.1.3 All the farmland is owner-occupied.

3.1.4 None of the farmland is within a NVZ (Nitrate Vulnerable Zone). There are no SSSI's.

3.2 Farming Policy

3.2.1 50 spring-calving suckler cows. Progeny are sold at 18 months. Suckler cows winter housed in cubicles and self-fed silage under cover. Spring born calves straw bedded in creep area.

3.2.2 Calves weaned in autumn and housed off-farm on contract. None of the manures from these cattle produced during the 180 day winter is returned to the farm since all is spread on the contract housing unit's land.

3.2.3 220 ewes & ewelambs. Conventional spring lambing, progeny sold fat through summer. Ewes housed for one month at lambing.

3.2.4 16,000 free-range layers. Conventional 13 month production cycle. Unit set-up January 2012. Stock-free period of one month between batches.

3.2.5 Proposed 16,000 free-range layers. This enterprise will also be on a conventional 13 month production cycle.

3.3 Livestock housing

3.3.1 Suckler cows are winter housed at Llys y Nant in conventional cubicles. There is cubicle provision for 76 but cow numbers do not exceed 50. The main building is 45' x 75' and the adjacent covered silage pit is a similar size. Straw bedded calving pens are within a separate building 105' x 45'.

3.3.2 Sheep are winter housed for one month at lambing in a traditional round-roofed old silo and adjacent monopitch lean-to.

3.3.3 16,000 layers are housed in a flat-deck building with free-range access to 20 acres of grassland.

3.3.4 The proposed building for 16,000 layers will be a multi-tiered building with free-range access for the birds to grassland.

3.4 Rainfall

3.4.1 Annual estimated rainfall (DairyCo data STD) is 1,658mm, with 861mm over the five winter months of the storage period October to February inclusive.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Oct-Feb
190	124	137	95	100	97	94	129	145	176	177	194	1658	861

3.5 Silage Effluent

3.5.1 Grass silage is stored in a pre-1991 covered clamp of concrete construction that is in good condition. Effluent is directed to the slurry store in line with SSAFO regulations.

4. Existing Storage of Organic Manures (slurry & manure)

4.1 Slurry from cattle is currently stored in an earth-banked lagoon of pre-1991 construction measuring 31.5m x 32m x 1.85m deep which is sited below the covered silo & cubicle shed. Rain falling on the two yards adjacent to the stock shed is diverted away from the lagoon since they carry clean or lightly soiled run-off. The slurry store is sometimes used to temporarily store the limited amounts of farm yard manure (FYM) produced from straw-bedded animals. Estimated capacity is 1109m^3 after allowing 750mm freeboard (see Appendix 1).

4.2 Estimated slurry & manure production for 152 days (October to February inclusive) is 1,246m^3 including rainwater falling on the lagoon. Hence estimated average slurry & dirty water production is 8.2m^3/day over the 152 day winter storage period (see Appendix 1).

4.3 The estimated storage capacity is therefore for 135 days (4½ months) of average production. This is within the legal requirements since the farm is not in a NVZ controlled area and is not governed by a Glastir grant aided scheme. Outside of these regulations, slurry can be spread throughout the winter providing that normal spreading regulations are adhered to. In practice the lagoon is always emptied once or twice during the winter when ground and weather conditions are suitable.

4.4 The existing 16,000 free-range egg housing has a flat-deck arrangement whereby manure is emptied from the building once every 13 months. Manure volume on emptying is calculated at 842m^3 (i.e. 758tonnes) using standard Welsh Government figures[1] (i.e. 16,000 x 0.12kg/day x 13 months @ 0.9t/m^3). Given that the existing slurry store has a capacity of 1109m^3 of liquid slurry and dirty water and that there is an area 124m^2 of concrete yard that could be diverted to drain into the slurry lagoon, it would be possible at certain times of the year to temporarily store the full volume of dry manure on emptying the existing 16,000 bird unit if necessary (eg adverse weather conditions) and yet still contain contaminated rainwater falling on the chicken manure. There has been no reason to actually do this to date, but it remains an option.

4.5 The current practice has been to export 50% of the poultry manure to neighbouring farmers during the process of emptying of the building on the 13-month cycle. Thus in reality only half the 842m^3 (i.e. 421m^3) would ever need to be temporarily stored in (or adjacent to) the concrete-floored slurry store. The actual process to date has been that the 421m^3 of chicken manure has been spread straight from shed onto suitable land without any intermediate storage at the end of some of the completed cycles to date, and at the end of the other cycles it was stored in a temporary field heap and covered with a plastic impermeable sheet. All three procedures are in line with latest COGAP & SSAFO regulations.

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[1] Nitrate Vulnerable Zones in Wales. Farmer's Workbook. 2014 edition

[3] Table 1.2 – *Poultry* manure production (note – all figures include litter)

Type of *livestock*		Daily manure produced by each animal (kg)
Chickens used for production of eggs for human consumption	Less than 17 weeks	0.04
	From 17 weeks	0.12
Chickens raised for meat		0.06
Chickens raised for breeding	Less than 25 weeks	0.04
	From 25 weeks	0.12
Turkeys	Male	0.16
	Female	0.12
Ducks		0.10
Ostriches		1.60

Note: figures include litter where appropriate

[4] Using a density of 0.9 for laying hen excreta and 0.5 for *poultry* litter

5. Proposals

5.1 The proposal is to erect a multi-tiered building for 16,000 free range layers at Glanmyddyfi, Pentrefelin. Manure will be emptied from this type of building twice per week via an elevator directly into a waiting vehicle and carted away from the Glanmyddyfi farm (e.g. by tractor & trailer, tractor & spreader, tipping lorry etc.).

5.2 The proposal is that all of the 842m^3 of manure produced per 13-month cycle at the new Glanmyddyfi unit will be exported to other farmers at the time of bi-weekly emptying of the building.

5.3 This procedure would obviate the need for the transport of manure from Glanmyddyfi back to Maes yr Haidd in Llanfynydd for temporary storage in covered field heaps, or at the slurry store site. Nevertheless, the fall-back position would be storage in field heaps at Maes yr Haidd, Llanfynydd or potentially at the slurry store in line with COGAP regulations.

5.4 The proprietors have not had any difficulty finding customers to take away 421m^3 chicken manure to date (i.e. 50% of the 13 month production cycle of the existing 16,000 hen unit) and do not envisage a problem with exporting up to 100% of the manure from the proposed unit (i.e. an additional 842m^3).

5.5 To date, the manure has been sold at a moderate cost to customers on a cubic metre basis since the demand from local farmers significantly exceeds the supply from the existing 16,000 bird unit.

5.6 Thus the Davies do not envisage any problem in finding customers for an additional 13½ tonnes per week of poultry manure.

6. Livestock Manure Nitrogen Capacity of the Farm

6.1 Existing loading of livestock nitrogen.

6.1.1 The Nitrogen loading limit recommended under COGAP is 250kg/ha of Nitrogen from livestock manures per annum for the whole holding. This limit becomes compulsory in areas regulated under a Nitrate Vulnerable Zone (NVZ), and in most circumstances the limit within NVZ's is actually reduced to 170kg/ha

6.1.2 Appendix 2 shows that the existing loading is currently 109 kg/ha of Nitrogen over the whole holding per year and thus well within both the NVZ and the COGAP recommended limits.

6.1.3 The calculation of 109kg/ha is based upon current practice of exporting half of manure from the poultry (i.e. 232t @ 40% DM* @ 19kgN/t* per annum (* reference table 2.5 'poultry manure' of RB209 Section 2 Organic materials).

6.1.4 If this practice were to discontinue, then the loading would rise to 146kg/ha and thus still be within regulations.

6.1.5 Hence the Nitrogen loading from manures produced by the livestock currently carried by the farm (including the existing 16,000 layers) is compliant with the Code of Good Agricultural Practice (COGAP) whether or not chicken manure is exported off the farm.

6.2 Future loading of livestock nitrogen

6.2.1 Appendix 3 shows the Nitrogen loading calculations on completion of the new 16,000 bird unit.

6.2.2 The calculations show that with an annual export of 695 tonnes of chicken manure, the loading of Nitrogen from Livestock Manures on the holding will remain at 109kg/ha/annum.

6.2.3 Hence the farm will remain compliant with the COGAP recommended limit of 250kgN/ha/annum on completion of the new free-range egg unit.

6.3 Position should no manure be exported

6.3.1 Appendix 4 shows that if the current practice of exporting manure is discontinued entirely (i.e. if no manure is exported at all, either from the existing unit or the proposed unit), then the proposed additional 16,000 bird unit would raise the Nitrogen production from Livestock Manures to only 220 kgN/ha/annum.

6.3.2 Hence - even if none of the manure from either the new or existing unit were to be exported - the farm would still remain within COGAP recommendations of 250kgN/ha

7. Glastir grants field limit of 250kg N /ha/year

7.1 The farm has joined the Glastir Sustainable Land Management Scheme for Wales. This Glastir Entry scheme has a five year commitment and the business is part way through the existing contract.

7.2 In addition to the Glastir Entry scheme, there was formally an Advanced Glastir scheme where there were optional Glastir capital grants which provides grant aid on capital investments to promote the efficient use of manure & slurry. And in addition, there was also formerly a Glastir Efficiency Grant (GEG) for capital works to promote the efficient use of manure & slurry.

7.3 The proprietors have not joined this Glastir Advanced or the Glastir Efficiency Grant scheme, but it is nevertheless worthwhile assessing the farm's manure production and storage against the strict requirements of those scheme.

7.4 The Glastir grants required that the spreadable organic manures produced during the housing period should not exceed 250kgN/ha per year in any field.

7.5 Appendix 3 (box 2) shows the calculated minimum spreadable area requirement is 26.82 ha once the new 16,000 bird unit is in place. The farm's map indicates 64 ha are available for spreading (excluding all land at Glanmyddyfi, Pentrefelin).

7.6 These calculations therefore indicate that the farm has sufficient land available to ensure that the 250kg of Nitrogen per ha per year from spreadable organic manure is not breached.

8. Air Quality – Manure storage & Spreading

8.1 A separate Air Quality report has been prepared by an expert to properly address this issue in full.

8.2 Within the context of this Manure Management report however, a summary of the activities involved in the storage and spreading of manures is defined below.

8.3 Manure storage is currently and will continue to be sited at:

- Maes yr Haidd, Llanfynydd for all poultry manures.
- Llys y Nant, Llanfynydd for all cattle and sheep manures.
- No manure storage will take place at Glanmyddyfi, Pentrefelin.

8.4 The distance between Glanmyddyfi and the existing manure storage sites is:

- Glanmyddyfi proposed poultry unit to the temporary field heap storage for poultry manure at Maes yr Haidd – 6,200 metres.
- Glanmyddyfi proposed poultry unit to the existing cattle slurry store at Llys y Nant – 4,860 metres

8.5 Manure spreading will take place at Maes yr Haidd and Llys y Nant in Llanfynydd.

8.6 No spreading of poultry manure will take place at the Glanmyddyfi farm unit, and it is planned to discontinue the current practice of occasionally spreading in some years cattle manure for the agricultural benefit of the fields.

8.7 There are 38.8ha of land available at Llys y Nant, Llanfynydd, for the spreading of cattle slurry, dirty water and farm yard manure (FYM) from cattle and sheep (appendix 6 and farm map at appendix 7). The annual production is 1,109^3 requiring spreading onto farm land (appendix 1). This calculates to 29m^3 per hectare. The Code of Good Agricultural Practice (COGAP) states that farmers should *"Avoid applying more than 50m3 of slurry or dirty water per hectare at any one time….."*. The current practice is to spread slurry at least twice, often three times per year. Thus the current slurry spreading practice fits comfortably well within the regulations.

8.8 There are 25.5ha of land available at Maes yr Haidd, Llanfynydd, for the spreading of poultry manure (appendix 6, and farm map appendix 7). There are 421m^3 per 13 month cycle of poultry manure (paragraph 4.5). This calculates to 15.2m^3 per hectare per annum.

8.9 Total nitrogen annual production from 16,000 laying hens is calculated at 8,800 kg (appendix 2). Half is exported and half is spread at Maes yr Haidd. Thus 4,400kgN is spread onto 25.5ha which calculates to 173kgN/ha/annum, against a limit of 250kgN/ha/annum. Thus the current manure spreading practice fits comfortably well within the regulations.

8.10 No manure poultry spreading or poultry manure storage will take place at Glanmyddyfi.

9. Cleaning & sterilising the proposed poultry unit

9.1 Cleaning and sterilisation of the poultry unit takes place at the end of each cycle (about every 13 months)

9.2 The new unit will have a below-ground effluent tank of 4,500 litres to collect and control all liquids.

9.3 The cleaning process comprises:

- 1st cleaning wash: Cold water high-pressure wash
- 2nd cleaning wash: Hot water pressure wash
- Sterilisation: low pressure (1,000psi) wide angled jet wash with 1:365 dilution of BioKill biodegradable disinfectant, following product labelling directions.

9.4 BioKill is sold by the company Biolink & Theseo. The product leaflet is attached at appendix 8. Biokill comprises Paracetic acid and Hydrogen peroxide.

9.5 The product leaflet states that it is environmentally safe, and degrades to carbon dioxide, oxygen and water:

GENERAL PROPERTIES

BioKill is non-tainting, does not leave residues after application and is environmentally safe, degrading to carbon dioxide, oxygen and water. Its stabilised formulation gives a longer-lasting product in diluted form and may be used via a power washer or other spraying equipment.

9.6 A tractor with a 4,500 litre slurry tanker will be used empty the dirty water from the collection tank, and to transport to Llanfynydd for spreading onto agricultural land for agricultural benefit.

10. Biosecurity

10.1 The manure collection arrangement within both the existing and the proposed free-range-egg buildings are designed to ensure that no dead birds can contaminate the chicken manure.

10.2 Hence there is no issues with biosecurity eg Botulism etc.

11. Additional information - Regulatory requirements

SSAFO regulations

- The Water Resources (Control of Pollution) (Silage, Slurry and Agricultural Fuel Oil) (Wales) Regulations 2010 apply to new or substantially reconstructed facilities for the storage of manures, slurries, silage and red diesel. The regulations stipulate sizing and construction performance standards, the legislation is not retrospective and facilities which pre-date the regulations are nominally exempt

Water Resources Act 1991

- It is an offence under Section 85 of the Water Act to cause or knowingly permit any poisonous, noxious or polluting matter or any solid waste matter to enter any controlled waters (this means ground-water, and all coastal or inland waters, including lakes, ponds, streams, canals and ditches) without written consent from the Environment Agency.

The Groundwater Regulations 1998

- A person shall be treated as contravening these Regulations if he causes or knowingly permits the disposal or tipping for the purposes of disposal of waste pesticides, including sheep dip, and pesticide tank washings to land, disposal of unused diluted pesticide and tank washings and washing water from equipment cleaning, or any other substance in list I or II of the Schedule in circumstances which might lead to an indirect discharge of that substance into groundwater, unless it is carried on under and in accordance with authorisation granted by the Environment Agency.

Health and Safety

- Any risk to health and safety associated with the workplace must be assessed in accordance with the **Health and Safety at Work etc. Act 1974 and the Management of Health and Safety at Work Regulations 1992**

- Substances that are known to be hazardous need to be assessed to the **Control of Substances Hazardous to Health (COSHH) 1994 Regulations.**

- **Construction (Design and Management) Regulations 1994** will apply to:

    - Any construction design work, irrespective of how long the construction phase lasts or how many workers are involved on site.
    - All demolition work proposed and any construction work that lasts for more than 30 days, or involves more than 500 person days of work must be notified to the local Health and Safety Executive, before commencement, using form F10.
    - Non-notifiable construction work which involves five people or more carrying out construction work on any one time.

Planning

- Any new building, structure, tank or excavation for the storage of manure, slurry and dirty water which is to be built within 400 metres of the curtilage of a ‘protected’ building requires planning permission.

- A ‘protected’ building is one that is occupied by people on a regular basis and is such as a private dwelling or school. The definition excludes a dwelling or other buildings that are used for or in connection with agriculture.

- The 400-metre rule is in addition to other restrictions on permitted development for agriculture such as that of ‘within 25 metres of the metalled portion of a road’.

- Smaller agricultural units of 0.5-5.0 hectares have more restricted development rights.

- Further information is contained in the booklet ‘A Farmer’s Guide to the Planning System’ that is available free from Welsh Assembly Government offices.

Extract from the Code of Good Agricultural Practice (COGAP) re Manure stores:

Solid manure stores

• Permanent stores for solid manures should have impermeable bases. The base should slope so that liquids run-off into collection channels, normally outside the store, which drain to an appropriate sized or designed tank.
• Using narrow densely packed A shaped heaps for manure will shed rainwater more easily and prevent manure from becoming very wet, and also reduce odour and ammonia emissions.
• Providing a roof or cover to keep rainfall off the manure will reduce dirty water run-off. You can reduce odour and ammonia emissions from poultry manure by keeping it as dry as possible. For pig buildings with scraped dunging passages, where it is intended to produce stackable solid manure there should be sufficient concrete yard area to retain the solid fraction for at least 1 month to allow drainage of liquids into a suitable slurry store.

Field heaps

• Only put solid manures into temporary field heaps if there is a minimal risk of run-off polluting groundwater or surface water. Sites should not be in a field liable to flooding or becoming waterlogged.
• You should not put heaps within 10 metres of a surface water or within 50 metres of a spring, well or borehole or in positions that would cause odour problems for nearby residents.
• Temporary field heaps should not be located in any single position for more than 12 successive months.
• There should be a 2-year gap before returning to the same field site.
• Field heaps should not be placed within 10 metres of field drains. If it is unavoidable that manure is stored over field drains, ensure it is for a maximum of a few days only and that it does not cause pollution.
• Field heaps should be located well away from any ruts or tracks that could provide a pathway for effluent to reach surface water or habitats.

Composting

• Composting solid manures reduces the quantity to be spread to land, and the odour that is released during and after spreading. Composting itself can give rise to site odours, and increase the loss of ammonia. The best results are obtained by using ingredients that are chopped and well mixed – usually manure and straw in the right proportions and by controlling temperature and moisture content, and by regular turning.

Appendix 1

Slurry storage (Current)

Slurry Production in Storage Period (1st Oct to 1st March - 152 days max)

		A	B	C	D
		Number of stock	No of days collected	Daily volume	Volume in storage period
Cattle					
Calf	0-3months	17	28	7.0	3266.3
Dairy replacement	>3 & <13 m		152	20.0	0.0
	>13m		152	40.0	0.0
Dairy Cow after 1st calf	> 9000 Litres		152	64.0	0.0
	6000- 9000 L		152	53.0	0.0
	< 6000 Litres		152	42.0	0.0
Beef Heifers or steers to 25 months	>3 & <13 m		152	20.0	0.0
	>13m & <2 5m		152	26.0	0.0
Beef Cows or steers over 25 months	For slaughter		152	32.0	0.0
	Cows < 500kg		152	32.0	0.0
	Cows > 500kg	50	152	45.0	342000.0
Bulls over 3 months	For slaughter		152	26.0	0.0
	Breeding 3-25m		152	26.0	0.0
	Breeding >25m	1	152	26.0	3952.0
Sheep					
From 6m up to 9m				1.8	0.0
>9m to lambing, tupping or slaughter				1.8	0.0
After lambing or tupping	< 60 kg	35	28	3.3	3234.0
	> 60 kg	185	28	5.0	25900.0
Goats, deer, horses					
Goats				3.5	0.0
Deer	Breeding			5.0	0.0
	Other			3.5	0.0
Horses				24.0	0.0
Total Volume slurry in storage period		**Box E**		Litres	**378352.3**
		Box F		Cubic metres	**378.4**

Slurry storage (Current)

Average volume of rainfall entering slurry store in Storage Period

	Description	Length	Width	Area m^2
Yard 1	Clean yard - diverted water	36.6	8.25	-
Yard 2	Yard lightly soiled - diverted	27.5	4.5	-
Yard 3				0.0
Yard 4				0.0
Silo 1				0.0
Silo 2				0.0
Silo 3				0.0
Earth banked slurry store	Pre 1991 lagoon	31.5	32	1008.0
Slurry store 1				0.0
Slurry store 2				0.0
Round slurry store		Radius:-		0.0
Less: clean roof 1				0.0
Less: clean roof 2				0.0
Less: clean roof 3				0.0
Less: clean roof 4				0.0
Total area of water entering slurry store				1008.0
Average rainfall in storage period (Oct to Feb inclusive) (mm)				861
Rainfall data source:	Dairy Co data for 01558			
Total Volume of Rainfall enering slurry store (m^3)			**Box G**	**867.9**

Dairy Wash water entering slurry store during storage period

	No Cows	Litres	No Days	Total litres	Volume m^3
High volume hose		30	152	0	
Low volume hose		20	152	0	
Or daily measured volume			152	0	
Total volume of wash water entering slurry store (M^3)				**Box K**	**0.0**

Other foul run-off entering slurry store during storage period

Details:			
	Estimate volume 1		
Details:			
	Estimate volume 2		
Total estimated volume (m^3)		**Box L**	**0.0**

Total Volume of Cattle & Sheep Slurry, Rainfall & Foul run-off produced in Storage Period (m^3)	**Box M**	**1246.2**

Appendix 1

Slurry storage (Current)

Total volume bought forward from previous page (Box M)		**1246.2**
Volume of Pig slurry produced 1st October to 1st April	**Box N**	
Export of slurry during storage period		
Mechanical separator for cattle slurry (less 15-20%)		
Spread of slurry to land with low run-off risk after closed period		
If so, add one weeks slurry production		

Total volume requiring storage (m^3)	**1246.2**

Volume of available slurry storage

	Freeboard	Length (m)	Width (m)	Depth (m)	Capacity (M^3)
Earth Banked store	750 mm	31.5	32	1.85	1108.8
Concrete store 1	300mm	0	0	0	0.0
Concrete store 2	300mm	0	0	0	0.0
		∏ (Pi)	Radius (m)	Depth (m)	
Steel tank (round)	300mm	3.142	0		0.0
Total available slurry storage (m^3)				**Box O**	**1108.8**

Average daily production of slurry & dirty water over housing period (m^3)	**8.2**
Average No. of days of storage capacity provided by existing slurry store	**135**

Nitrogen limit (current)

Land available on holding

Total area of land inside a NVZ	**Box A**	**0.00**
Total area of land outside of a NVZ	**Box B**	**118.22**

Land (ha) available for spreading organic manures and slurry (as identified in Manure Management Plan & Field Risk Maps)	**Box 1**	**64.30**

Livestock manure Nitrogen capacity of farm

		Limit kg N per ha		Total Kg N
Area inside NVZ	0.00	170	**Box C**	0
Area outside NVZ	118.22	250	**Box D**	29555
Livestock manure capacity of farm (kg N)			**Box E**	**29,555**

Livestock manure during housed period capacilty of farm for Glastir grants

	ha	Limit kg N per ha		Total Kg N
Area available for spreading	64.30	250		
Spreadable organic livestock manure capacity of farm (kg N)			***Box 1a***	**16,075**

Appendix 2

Nitrogen limit (current)

Total Nitrogen produced by Livestock on the Holding

		A	B	C	Glastir grant eligibility	
		Number of stock	Total N (kg/annum)	Total N produced	Days Housed	Total N in housed period
Cattle						
Calf	0-3months	12.5	8	100	28	8
Dairy replacement	>3 & <13 m		35	0	182	0
	>13m		61	0	182	0
Dairy Cow after 1st calf	> 9000 Litres		115	0	182	0
	6000- 9000 L		101	0	182	0
	< 6000 Litres		77	0	182	0
Beef Heifers or steers to 25 months	>3 & <13 m	12.5	33	413	0	0
	>13m & <2 5m	25	50	1250	0	0
Beef Cows or steers over 25 months	For slaughter		50	0	182	0
	Cows < 500kg		61	0	182	0
	Cows > 500kg	50	83	4150	182	2069
Bulls over 3 months	For slaughter		54	0	182	0
	Breeding 3-25m		50	0	182	0
	Breeding >25m	1	48	48	182	24
Sheep						
From 6m up to 9m			2.0	0	0	0
>9m to lambing, tupping or slaughter			1.4	0	0	0
After lambing or tupping	< 60 kg	35	7.6	266	30	22
	> 60 kg	185	12.0	2220	30	182
Goats, deer, horses						
Goats			15.0	0	152	0
Deer	Breeding		15.2	0	152	0
	Other		12.0	0	152	0
Horses			21.0	0	152	0
Pigs						
From 7kg and less than 13kg			1.5	0	182	0
From 13kg and less than 31kg			5.2	0	182	0
From 31kg and less than 66kg			8.8	0	182	0
From 66 Kg:						
Intended for slaughter			12.0	0	182	0
Sows for breeding but not yet had 1st litter			13.9	0	182	0
Sows (inc litter to 7kg) fed low protein diet with synthetic amino acids			16.1	0	182	0
Sows (inc litter to 7kg) fed low protein diet without synthetic amino acids			17.9	0	182	0
Breeding boars from 66kg to 150 kg			12.0	0	182	0
Breeding boars from 150 kg			17.5	0	182	0
Poultry						
Chickens used for production of eggs for human consumption	less than 17 weeks		0.23	0	365	0
	>17 weeks (caged)		0.41	0	365	0
	>17wks (not caged)	16000	0.55	8800	365	8800
Chickens raised for meat			0.39	0	365	0
Chickens raised for breeding	Less than 25 weeks		0.31	0	365	0
	From 25 weeks		0.74	0	365	0
Turkeys	Male		1.37	0	365	0
	Female		1.03	0	365	0
Ducks			0.91	0	365	0
Ostiches			1.40	0	365	0
Total annual N (including pigs & poultry)			**Box F**	**17,247**		
		Total Nitrogen Applied from Manure			***Box 2a***	**11,105**

Nitrogen limit (current)

Imported Livestock manure

Manure type	Quantity (tonnes or M3)	Total N content (kg/t or kg/m3)		Total nitrogen (kg)
Cattle manure		6.0	kg / tonne	0
Pig manure		7.0	kg / tonne	0
Sheep manure		6.0	kg / tonne	0
Duck manure		6.5	kg / tonne	0
Horse manure		7.0	kg / tonne	0
Laying hens manure		19.0	kg / tonne	0
Turkey or Broiler manure		30.0	kg / tonne	0
Slurry				
Dairy slurry		2.6	kg / m3	0
Beef cattle slurry		2.6	kg / m3	0
Pig slurry		3.6	kg / m3	0
Separated cattle slurry (liquid fraction)				
strainer box		1.5	kg / m3	0
weeping wall		2.0	kg / m3	0
mechanical separator		3.0	kg / m3	0
Separated cattle slurry (solid fraction)				
solid fraction		4.0	kg / m3	0
Separated pig liquid		3.6	kg / m3	0
Separated pig solid		5.0	kg / m3	0
Dirty Water		0.5	kg / m3	0
Total N of all Imported Livestock manure (kg N/year)			**Box G**	**0**

Exported Livestock manure

Manure type	Quantity (tonnes or M3)	Total N content (kg/t or kg/m3)		Total nitrogen (kg)
Cattle manure		6.0	kg / tonne	0
Pig manure		7.0	kg / tonne	0
Sheep manure		6.0	kg / tonne	0
Duck manure		6.5	kg / tonne	0
Horse manure		7.0	kg / tonne	0
Poultry manure @ 40% DM	232	19.0	kg / tonne	4,400
Slurry				
Dairy slurry		2.6	kg / m3	0
Beef cattle slurry		2.6	kg / m3	0
Pig slurry		3.6	kg / m3	0
Separated cattle slurry (liquid fraction)				
strainer box		1.5	kg / m3	0
weeping wall		2.0	kg / m3	0
mechanical separator		3.0	kg / m3	0
Separated cattle slurry (solid fraction)				
solid fraction		4.0	kg / m3	0
Separated pig liquid		3.6	kg / m3	0
Separated pig solid		5.0	kg / m3	0
Dirty Water		0.5	kg / m3	0
Total N of all Exported Livestock manure (kg N/year)			**Box H**	**4400**

Nitrogen limit (current)

NVZ - Calculation of loading of livestock manure nitrogen for farm

Total nitrogen produced by livestock on the holding	Box F	17247
Total nitrogen of imported livestock manure	Box G	0
Total nitrogen of exported livestock manure	Box H	4400

Total loading of livestock manure Nitrogen (kg N/year)	Box I	12847

Nitrogen Livestock Manure loading in Kg of N per hectare	109

Are you compliant with with NVZ limit of 170kg/ha and Non-NVZ limit of 250kg/ha nitrogen livestock manure loading	Yes

Glastir grants - Calculation of loading of spreadable livestock manure nitrogen for farm

Total nitrogen produced by livestock in housed period	*Box 2a*	11105
Total nitrogen of imported livestock manure	Box G	0
Total nitrogen of exported livestock manure	Box H	4400

Total loading of spreadable livestock manure Nitrogen (kg N/year) produced during the housed period	*Box 2b*	6705
Total area required to spread all manures produced, keeping within the 250kg/ha total N limit from organic manures	Box 2	26.82

Are you compliant with with Glastir grants limit of 250kg/ha N from spreadable organic manures	Yes

Nitrogen limit (future)

Land available on holding

Total area of land inside a NVZ	**Box A**	**0.00**
Total area of land outside of a NVZ	**Box B**	**118.22**

Land (ha) available for spreading organic manures and slurry (as identified in Manure Management Plan & Field Risk Maps)	**Box 1**	**64.30**

Livestock manure Nitrogen capacity of farm

		Limit kg N per ha		Total Kg N
Area inside NVZ	0.00	170	**Box C**	0
Area outside NVZ	118.22	250	**Box D**	29555
Livestock manure capacity of farm (kg N)			**Box E**	**29,555**

Livestock manure during housed period capacilty of farm for Glastir grants

	ha	Limit kg N per ha		Total Kg N
Area available for spreading	64.30	250		
Spreadable organic livestock manure capacity of farm (kg N)			***Box 1a***	**16,075**

Nitrogen limit (future)

Total Nitrogen produced by Livestock on the Holding

		A	B	C	Glastir grant eligibility	
		Number of stock	Total N (kg/annum)	Total N produced	Days Housed	Total N in housed period
Cattle						
Calf	0-3months	12.5	8	100	28	8
Dairy replacement	>3 & <13 m		35	0	182	0
	>13m		61	0	182	0
Dairy Cow after 1st calf	> 9000 Litres		115	0	182	0
	6000- 9000 L		101	0	182	0
	< 6000 Litres		77	0	182	0
Beef Heifers or steers to 25 months	>3 & <13 m	12.5	33	413	0	0
	>13m & <2 5m	25	50	1250	0	0
Beef Cows or steers over 25 months	For slaughter		50	0	182	0
	Cows < 500kg		61	0	182	0
	Cows > 500kg	50	83	4150	182	2069
Bulls over 3 months	For slaughter		54	0	182	0
	Breeding 3-25m		50	0	182	0
	Breeding >25m	1	48	48	182	24
Sheep						
From 6m up to 9m			2.0	0	0	0
>9m to lambing, tupping or slaughter			1.4	0	0	0
After lambing or tupping	< 60 kg	35	7.6	266	30	22
	> 60 kg	185	12.0	2220	30	182
Goats, deer, horses						
Goats			15.0	0	152	0
Deer	Breeding		15.2	0	152	0
	Other		12.0	0	152	0
Horses			21.0	0	152	0
Pigs						
From 7kg and less than 13kg			1.5	0	182	0
From 13kg and less than 31kg			5.2	0	182	0
From 31kg and less than 66kg			8.8	0	182	0
From 66 Kg:						
Intended for slaughter			12.0	0	182	0
Sows for breeding but not yet had 1st litter			13.9	0	182	0
Sows (inc litter to 7kg) fed low protein diet with synthetic amino acids			16.1	0	182	0
Sows (inc litter to 7kg) fed low protein diet without synthetic amino acids			17.9	0	182	0
Breeding boars from 66kg to 150 kg			12.0	0	182	0
Breeding boars from 150 kg			17.5	0	182	0
Poultry						
Chickens used for production of eggs for human consumption	less than 17 weeks		0.23	0	365	0
	>17 weeks (caged)		0.41	0	365	0
	>17wks (not caged)	32000	0.55	17600	365	17600
Chickens raised for meat			0.39	0	365	0
Chickens raised for breeding	Less than 25 weeks		0.31	0	365	0
	From 25 weeks		0.74	0	365	0
Turkeys	Male		1.37	0	365	0
	Female		1.03	0	365	0
Ducks			0.91	0	365	0
Ostiches			1.40	0	365	0
Total annual N (including pigs & poultry)			**Box F**	**26,047**		
		Total Nitrogen Applied from Manure			***Box 2a***	**19,905**

Nitrogen limit (future)

Imported Livestock manure

Manure type	Quantity (tonnes or M3)	Total N content (kg/t or kg/m3)		Total nitrogen (kg)
Cattle manure		6.0	kg / tonne	0
Pig manure		7.0	kg / tonne	0
Sheep manure		6.0	kg / tonne	0
Duck manure		6.5	kg / tonne	0
Horse manure		7.0	kg / tonne	0
Laying hens manure		19.0	kg / tonne	0
Turkey or Broiler manure		30.0	kg / tonne	0
Slurry				
Dairy slurry		2.6	kg / m3	0
Beef cattle slurry		2.6	kg / m3	0
Pig slurry		3.6	kg / m3	0
Separated cattle slurry (liquid fraction)				
strainer box		1.5	kg / m3	0
weeping wall		2.0	kg / m3	0
mechanical separator		3.0	kg / m3	0
Separated cattle slurry (solid fraction)				
solid fraction		4.0	kg / m3	0
Separated pig liquid		3.6	kg / m3	0
Separated pig solid		5.0	kg / m3	0
Dirty Water		0.5	kg / m3	0
Total N of all Imported Livestock manure (kg N/year)			**Box G**	**0**

Exported Livestock manure

Manure type	Quantity (tonnes or M3)	Total N content (kg/t or kg/m3)		Total nitrogen (kg)
Cattle manure		6.0	kg / tonne	0
Pig manure		7.0	kg / tonne	0
Sheep manure		6.0	kg / tonne	0
Duck manure		6.5	kg / tonne	0
Horse manure		7.0	kg / tonne	0
Poultry manure @ 40% DM	695	19.0	kg / tonne	13,200
Slurry				
Dairy slurry		2.6	kg / m3	0
Beef cattle slurry		2.6	kg / m3	0
Pig slurry		3.6	kg / m3	0
Separated cattle slurry (liquid fraction)				
strainer box		1.5	kg / m3	0
weeping wall		2.0	kg / m3	0
mechanical separator		3.0	kg / m3	0
Separated cattle slurry (solid fraction)				
solid fraction		4.0	kg / m3	0
Separated pig liquid		3.6	kg / m3	0
Separated pig solid		5.0	kg / m3	0
Dirty Water		0.5	kg / m3	0
Total N of all Exported Livestock manure (kg N/year)			**Box H**	**13200**

Nitrogen limit (future)

NVZ - Calculation of loading of livestock manure nitrogen for farm

Total nitrogen produced by livestock on the holding	Box F	26047
Total nitrogen of imported livestock manure	Box G	0
Total nitrogen of exported livestock manure	Box H	13200

Total loading of livestock manure Nitrogen (kg N/year)	Box I	12847

Nitrogen Livestock Manure loading in Kg of N per hectare	109

Are you compliant with with NVZ limit of 170kg/ha and Non-NVZ limit of 250kg/ha nitrogen livestock manure loading	Yes

Glastir grants - Calculation of loading of spreadable livestock manure nitrogen for farm

Total nitrogen produced by livestock in housed period	*Box 2a*	19905
Total nitrogen of imported livestock manure	Box G	0
Total nitrogen of exported livestock manure	Box H	13200

Total loading of spreadable livestock manure Nitrogen (kg N/year) produced during the housed period	*Box 2b*	6705
Total area required to spread all manures produced, keeping within the 250kg/ha total N limit from organic manures	Box 2	26.82

Are you compliant with with Glastir grants limit of 250kg/ha N from spreadable organic manures	Yes

Nitrogen limit (maximum)

Land available on holding

Total area of land inside a NVZ	**Box A**	**0.00**

Total area of land outside of a NVZ	**Box B**	**118.22**

Livestock manure Nitrogen capacity of farm

		Limit kg N per ha		Total Kg N
Area inside NVZ	0.00	170	**Box C**	0
Area outside NVZ	118.22	250	**Box D**	29555
Livestock manure capacity of farm (kg N)			**Box E**	**29,555**

Total Nitrogen produced by Livestock on the Holding

		A	B	C
		Number of stock	**Total N (kg/annum)**	**Total N produced**
Cattle				
Calf	0-3months	12.5	8	100
Dairy replacement	>3 & <13 m		35	0
	>13m		61	0
Dairy Cow after 1st calf	> 9000 Litres		115	0
	6000- 9000 L		101	0
	< 6000 Litres		77	0
Beef Heifers or steers to 25 months	>3 & <13 m	12.5	33	413
	>13m & <2 5m	25	50	1250
Beef Cows or steers over 25 months	For slaughter		50	0
	Cows < 500kg		61	0
	Cows > 500kg	50	83	4150
Bulls over 3 months	For slaughter		54	0
	Breeding 3-25m		50	0
	Breeding >25m	1	48	48
Sheep				
From 6m up to 9m			2.0	0
>9m to lambing, tupping or slaughter			1.4	0
After lambing or tupping	< 60 kg	35	7.6	266
	> 60 kg	185	12.0	2220
Goats, deer, horses				
Goats			15.0	0
Deer	Breeding		15.2	0
	Other		12.0	0
Horses			21.0	0
Pigs				
From 7kg and less than 13kg			1.5	0
From 13kg and less than 31kg			5.2	0
From 31kg and less than 66kg			8.8	0
From 66 Kg:				
Intended for slaughter			12.0	0
Sows for breeding but not yet had 1st litter			13.9	0
Sows (inc litter to 7kg) fed low protein diet with synthetic amino acids			16.1	0
Sows (inc litter to 7kg) fed low protein diet without synthetic amino acids			17.9	0
Breeding boars from 66kg to 150 kg			12.0	0
Breeding boars from 150 kg			17.5	0
Poutry				
Chickens used for production of eggs for human consumption	less than 17 weeks		0.23	0
	>17 weeks (caged)		0.41	0
	>17wks (not caged)	32000	0.55	17600
Chickens raised for meat			0.39	0
Chickens raised for breeding	Less than 25 weeks		0.31	0
	From 25 weeks		0.74	0
Turkeys	Male		1.37	0
	Female		1.03	0
Ducks			0.91	0
Ostiches			1.40	0
Total annual N (including pigs & poultry)			**Box F**	**26,047**
		Total Nitrogen Applied from Manure		

Nitrogen limit (maximum)

Imported Livestock manure

Manure type	Quantity (tonnes or M3)	Total N content (kg/t or kg/m3)		Total nitrogen (kg)
Cattle manure		6.0	kg / tonne	0
Pig manure		7.0	kg / tonne	0
Sheep manure		6.0	kg / tonne	0
Duck manure		6.5	kg / tonne	0
Horse manure		7.0	kg / tonne	0
Laying hens manure		19.0	kg / tonne	0
Turkey or Broiler manure		30.0	kg / tonne	0
Slurry				
Dairy slurry		2.6	kg / m3	0
Beef cattle slurry		2.6	kg / m3	0
Pig slurry		3.6	kg / m3	0
Separated cattle slurry (liquid fraction)				
strainer box		1.5	kg / m3	0
weeping wall		2.0	kg / m3	0
mechanical separator		3.0	kg / m3	0
Separated cattle slurry (solid fraction)				
solid fraction		4.0	kg / m3	0
Separated pig liquid		3.6	kg / m3	0
Separated pig solid		5.0	kg / m3	0
Dirty Water		0.5	kg / m3	0
Total N of all Imported Livestock manure (kg N/year)			**Box G**	**0**

Exported Livestock manure

Manure type	Quantity (tonnes or M3)	Total N content (kg/t or kg/m3)		Total nitrogen (kg)
Cattle manure		6.0	kg / tonne	0
Pig manure		7.0	kg / tonne	0
Sheep manure		6.0	kg / tonne	0
Duck manure		6.5	kg / tonne	0
Horse manure		7.0	kg / tonne	0
Laying hens manure	0	19.0	kg / tonne	0
Turkey or Broiler manure		30.0	kg / tonne	0
Slurry				
Dairy slurry		2.6	kg / m3	0
Beef cattle slurry		2.6	kg / m3	0
Pig slurry		3.6	kg / m3	0
Separated cattle slurry (liquid fraction)				
strainer box		1.5	kg / m3	0
weeping wall		2.0	kg / m3	0
mechanical separator		3.0	kg / m3	0
Separated cattle slurry (solid fraction)				
solid fraction		4.0	kg / m3	0
Separated pig liquid		3.6	kg / m3	0
Separated pig solid		5.0	kg / m3	0
Dirty Water		0.5	kg / m3	0
Total N of all Exported Livestock manure (kg N/year)			**Box H**	**0**

NVZ - Calculation of loading of livestock manure nitrogen for farm

Total nitrogen produced by livestock on the holding	**Box F**	**26047**
Total nitrogen of imported livestock manure	**Box G**	**0**
Total nitrogen of exported livestock manure	**Box H**	**0**

Total loading of livestock manure Nitrogen (kg N/year)	**Box I**	**26047**

Nitrogen Livestock Manure loading in Kg of N per hectare	**220**

Are you compliant with with NVZ limit of 170kg/ha and Non-NVZ limit of 250kg/ha nitrogen livestock manure loading	**Yes**

Area of land

Land area in a NVZ

Field name /Number	Area (ha)	Field name /Number	Area (ha)
Total area of land inside a NVZ		**Box A**	**0.00**

Land area outside of a NVZ

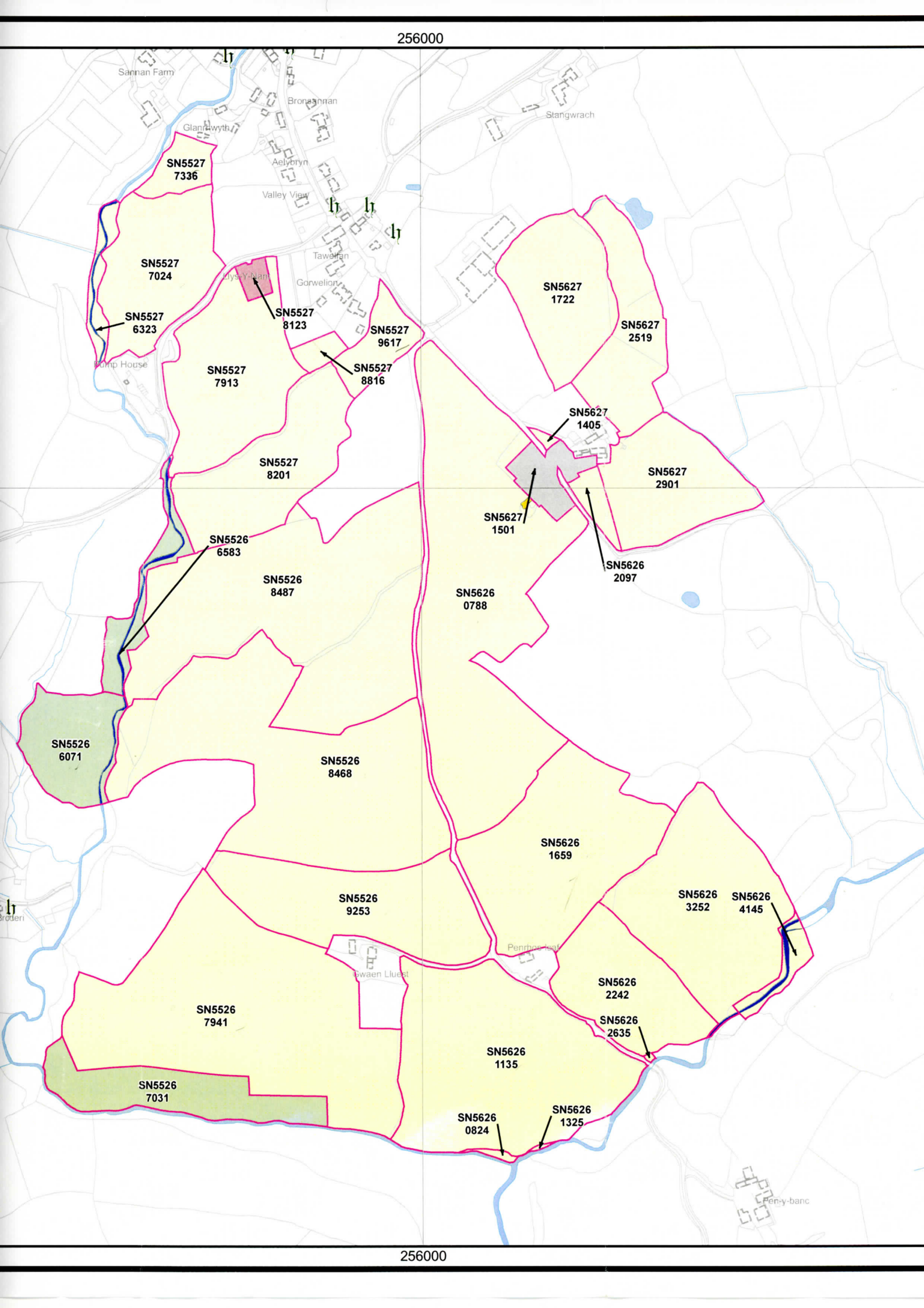
Field name /Number	Area (ha)	Field name /Number	Area (ha)
Llys y Nant	47.77		
Maes yr Haidd	54.66		
Glan Myddyfi	15.79		
Total area of land outside of a NVZ		**Box B**	**118.22**

Livestock manure Nitrogen capacity of farm

		Limit kg N per ha		Total Kg N
Area inside NVZ	0.00	170	**Box C**	0
Area outside NVZ	118.22	250	**Box D**	29555
Livestock manure capacity of farm (kg N)			**Box E**	**29,555**

Slurry and manure spreading areas

	Sheet ref	Field	Acres	Hectares	
Llys y Nant	SN5527	7024	4	1.6	
		7913	6	2.4	
		8201	6	2.4	
	SN5526	8487	14	5.7	
		8468	12	4.9	
		9253	6	2.4	
		7941	8	3.2	
	SN5627	2901	4	1.6	
	SN5626	788	14	5.7	
		1659	6	2.4	
		1135	8	3.2	
		3252	8	3.2	
					38.8
Maes yr Haidd	SN5629	2496	15	6.1	
		2458	12	4.9	
		2735	5	2.0	
		6161	5	2.0	
		4645	8	3.2	
		5638	8	3.2	
		7629	8	3.2	
		5013	2	0.8	
					25.5
Glanmyddyfi	No land will be spread with manure or slurry				0
				Total	64.3


256000
Sannan Farm
Bronsannan
Glanrhwyth
Aelybryn
Valley View
Stangwrach
Tawelfan
Gorwelion
Llys-Y-Nant
Pump House
SN5527 7336
SN5527 7024
SN5527 6323
SN5527 8123
SN5527 9617
SN5527 8816
SN5527 7913
SN5527 8201
SN5526 6583
SN5526 8487
SN5526 6071
SN5526 8468
SN5526 9253
SN5526 7941
SN5526 7031
SN5627 1722
SN5627 2519
SN5627 1405
SN5627 2901
SN5627 1501
SN5626 2097
SN5626 0788
SN5626 1659
SN5626 3252
SN5626 4145
SN5626 2242
SN5626 2635
SN5626 1135
SN5626 0824
SN5626 1325
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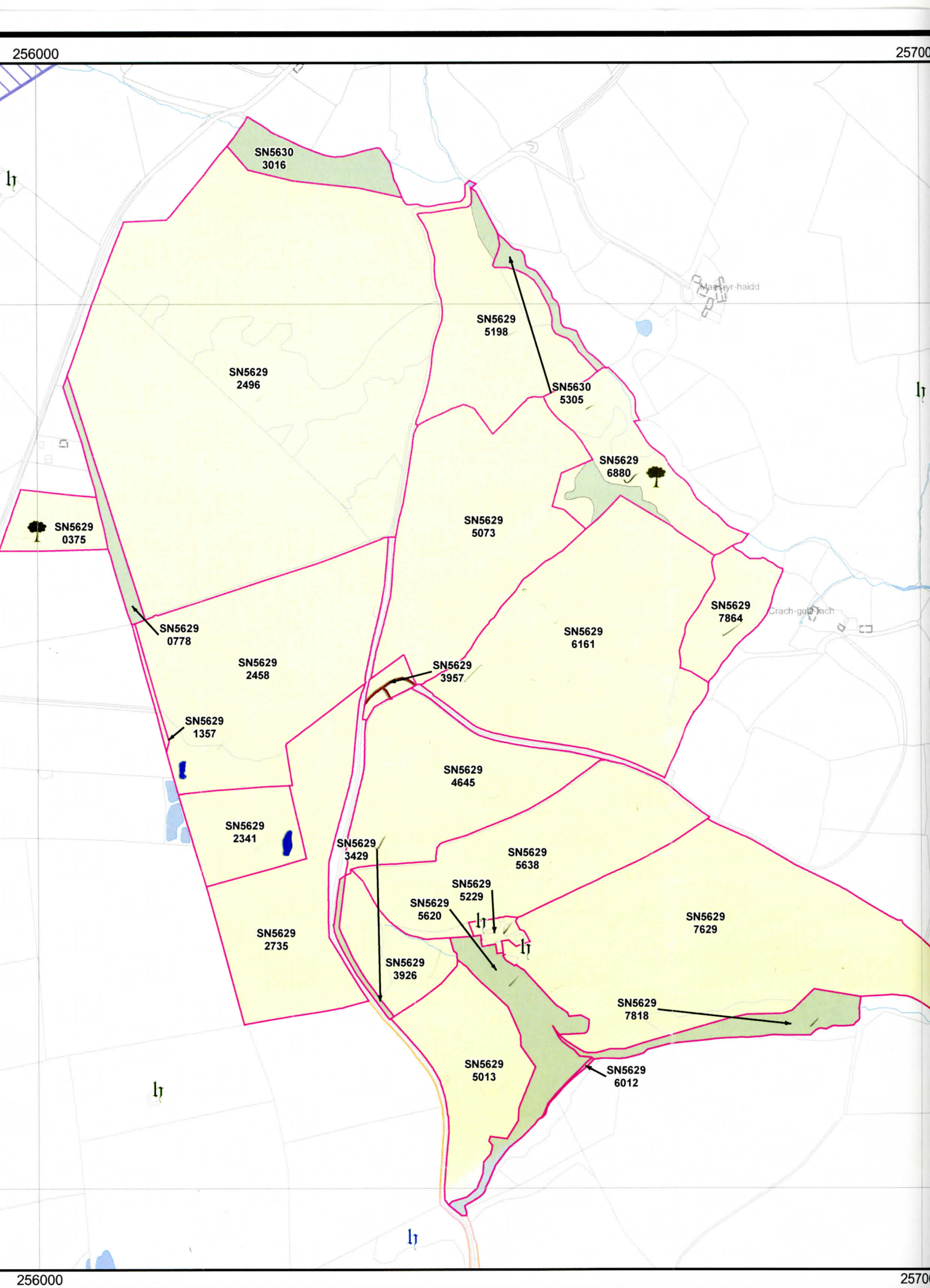
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BioKill

Rapidly Biodegradable Farm Disinfectant

- Stabilised long-lasting formulation
- Broad spectrum · Concentrated
- Effective disinfection of all classes of livestock housing
- Formulated for increased surface activity

A colourless, stabilised liquid blend of peracetic acid and hydrogen peroxide.

GENERAL PROPERTIES

BioKill is non-tainting, does not leave residues after application and is environmentally safe, degrading to carbon dioxide, oxygen and water. Its stabilised formulation gives a longer-lasting product in diluted form and may be used via a power washer or other spraying equipment.





INSTRUCTIONS FOR USE

Apply via a power lance set to low pressure to meet the following dilution rates.

- Defra General orders 1:160
- Defra Foot and mouth disease Orders 1:140
- Defra Disease of Poultry Orders 1:365
- Foot and wheel dips 1:100
- Fogging 1:10

SUITABLE FOR:

Poultry, pigs, game birds, cattle and horses.

PACK SIZE

10 kg, 25 kg, 200 kg & 1000 kg.

Use biocides safely. Always read the label and product information before use.

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