Guidance Booklet

For Northern Ireland Farmers on the Requirements of the Nitrates Action Programme (Northern Ireland) Regulations 2006 and the Phosphorus (Use in Agriculture) (Northern Ireland) Regulations 2006

Department of Agriculture and Rural Development
www.dardni.gov.uk

Environment & Heritage Service
www.ehsni.gov.uk

Copies of this document can be made available on request in alternative formats, for example, in large print, Braille disc, audio cassette and other languages. If you wish to request the document in an alternative format contact details are provided in Annex T, page 97.

Foreword

The Nitrates Action Programme Regulations (Northern Ireland) 2006 (NAP Regulations) and the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2006 (Phosphorus Regulations) bring into operation measures to improve the use of these nutrients on farms and reduce their input to Northern Ireland's water environment from agricultural sources.

This Guidance Booklet provides details of what you are required to do to comply with the Regulations effective from 1 January 2007.

For ease of reference, the guidance is split into:

Introduction	Contains brief background information on the Regulations.
Summary	Table of the measures contained in the Regulations.
Section 1	Details the requirements of the NAP and Phosphorus Regulations.
Section 2	Inspection and enforcement of the Regulations.
Key Definitions and Glossary	Explanation of terms and abbreviations used in the Guidance Booklet.
Annexes	Information and worksheets to assist in understanding and compliance of the Regulations.

Further information, and advice can be obtained from the points of contact provided in Annex T, page 97.

A Guidance Workbook can be accessed online at www.dardni.gov.uk or www.ehsni.gov.uk, local DARD offices and at College of Agriculture, Food and Rural Enterprise (CAFRE) information meetings which will be held throughout Northern Ireland.

It should be noted that the guidance referring to Nitrates and Phosphorus contained in the Code of Good Agricultural Practice for the Prevention of Pollution of Water, issued by DARD in 2003 to all farmers, is superseded by this guidance from 1 January 2007.

Contents

Farm example used

Throughout the text and annexes of this Guidance Booklet the following farm scenario is used for explanatory purposes.

46ha farm
40ha of grassland
3ha of spring barley
3ha of winter wheat
50 suckler cow herd
150 ewe flock
324m^3 of storage capacity
Out-winters and straw beds livestock

Nitrates Directive Action Programme

Guidance Document

Introduction

The Nitrates Action Programme Regulations (Northern Ireland) 2006 (NAP Regulations) and the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2006 (Phosphorus Regulations) have been introduced to improve the use of nutrients on farms and as a result improve water quality throughout Northern Ireland.

A series of water quality problems affect the groundwaters, rivers and lakes of Northern Ireland and extends into the surrounding marine waters. The largest and most widespread of these is nutrient enrichment arising from too much nitrogen and phosphorus entering the water environment. This causes an undesirable disturbance to the water's ecology resulting in a phenomenon known as eutrophication. The urban and industrial sectors also contribute to this problem and action is being directed at these sectors, in particular the urban sector, through the implementation of other Directives.

The introduction of the Nitrates Action Programme Regulations meets Northern Ireland's legal and environmental obligations and the Phosphorus Regulations support these obligations. Both sets of Regulations apply to all farmers in Northern Ireland, from 1 January 2007, including those farmers operating in the seven previously designated Nitrate Vulnerable Zones (NVZs). In effect the seven NVZs no longer exist and the previous Action Programme for Nitrate Vulnerable Zones Regulations (Northern Ireland) 1999 has been revoked.

To help understand and comply with the rules, measures and requirements introduced by the Regulations the Departments are issuing this Guidance Booklet to all farmers throughout Northern Ireland. This Guidance Booklet is compiled in a question and answer format and colour coded for ease of reference.

Cross-Compliance

The Nitrates Directive is one of the Cross-Compliance Statutory Management Requirements, therefore farmers claiming Single Farm Payment and other direct payments are required to comply with the NAP Regulations. Table 1: Summary of the NAP and Phosphorus Regulations includes a summary of the measures under the NAP Regulations and groups these as the verifiable standards that must be adhered to under Cross-Compliance. In addition to the measures summarised on pages 8 and 9, compliance with a Notice served under the NAP Regulations is also a verifiable standard. Measures relating to the Phosphorus Regulations are not Cross-Compliance Verifiable Standards. However, adherence to both sets of Regulations is required by law.

Summary of Nitrates Action Programme and Phosphorus Regulations

<table>
<tr><th>Verifiable standards</th><th>Key Measures</th></tr>
<tr><td>Closed Spreading Periods</td><td>❑ Chemical Nitrogen fertiliser must not be applied between 15 September to 31 January.
❑ Organic manures, excluding farmyard manure and dirty water, must not be applied between 15 October to 31 January.</td></tr>
<tr><td>Land Application Restrictions</td><td>❑ All fertilisers, chemical and organic, must not be applied:
• on waterlogged soils, flooded land or land liable to flood;
• on frozen ground or snow covered ground;
• if heavy rain is forecast;
• on steep slopes where other significant risks of water pollution exist.

❑ Prevent entry of fertilisers to waters and ensure application is accurate, uniform and not in a location or manner likely to cause entry to waters.
❑ Chemical fertilisers must not be applied within 1.5m of any waterway.
❑ Organic manures including dirty water must not be applied within:
• 20m of lakes;
• 50m of a borehole, spring or well;
• 250m of a borehole used for a public water supply;
• 15m of exposed cavernous or karstified limestone features;
• 10m of a waterway other than lakes; this distance may be reduced to 3m where slope is less than 10% towards the waterway and where organic manures are spread by bandspreaders, trailing shoe, trailing hose or soil injection or where adjoining area is less than 1 hectare in size or not more than 50m in width

❑ Application rates:
• No more than 50m^3/ha (4500 gal/ac) or 50 tonnes/ha (20t/ac) of organic manures to be applied at one time, with a minimum of three weeks between applications;
• No more than 50m^3/ha (4500 gal/ac) of dirty water to be applied at one time, with a minimum of two weeks between applications.

❑ Slurry can only be spread by inverted splashplate, bandspreaders, trailing shoe, trailing hose or soil injection.
❑ Dirty water to be spread by same methods as slurry and by irrigation.
❑ Sludgigators must not be used.</td></tr>
<tr><td>Chemical Nitrogen (N) Fertiliser Crop Requirement</td><td>Maximum kg N/ha on grassland
<table><tr><th>Year</th><th>2007</th><th>2009</th><th>2010</th></tr><tr><td>Dairy farms*</td><td>289 (8 3/4 bags/ac)**</td><td>281 (8 1/2 bags/ac)</td><td>272 (8 1/4 bags/ac)</td></tr><tr><td>Other farms</td><td>239 (7 1/4 bags /ac)</td><td>231 (7 bags/ac)</td><td>222 (6 3/4 bags/ac)</td></tr></table>(N from organic manures other than livestock must be subtracted)

*More than 50% of N in livestock manure comes from dairy cattle
** Approximate number of 50kg bags of a 27% N type fertiliser
❑ For non-grassland crops, the crop requirement as determined by RB209, must not be exceeded.</td></tr>
</table>

Verifiable standards	Key Measures
Chemical Phosphorus Fertiliser	❑ *Can only apply chemical Phosphorus fertiliser if soil analysis shows a requirement as per RB209.
Nitrogen Livestock Manure Limits	❑ 170kg N/ha/year farm limit. A derogation for a higher limit is being sought for cattle farms.
Livestock Manure Storage Requirements	❑ 26 weeks for pig and poultry enterprises. ❑ 22 weeks for other enterprises. ❑ Provided certain criteria are met there are allowances for out-wintering, animals in bedded accommodation, separated cattle slurry, renting additional tanks and exporting slurry to approved outlets. ❑ Storage must be maintained to prevent seepage or run-off. ❑ New or substantially enlarged or reconstructed stores must comply with Silage, Slurry and Agricultural Fuel Oil (SSAFO) (Northern Ireland) Regulations, 2003. ❑ Farmyard manure and poultry litter can be stored in fields where the next application is to take place but for no longer than 180 days. It must not be stored in the same location of the field year after year. Poultry litter must be covered with an impermeable membrane within 24 hours of placement in the field. The storage of poultry litter to be reviewed 31 December 2008. Heaps must not be stored within: • 50m of lakes; • 20m of a waterway; • 50m of a borehole, spring or well; • 250m of a borehole used for a public water supply; • 50m of exposed cavernous or karstified limestone features. ❑ Provide storage for dirty water during periods when conditions for land application are unsuitable.
Land Management	❑ Crop and soil management to minimise soil erosion and nutrient run off.
Record Keeping	❑ Agricultural area, field size and location. ❑ Cropping regimes and areas, Soil Nitrogen Supply (SNS) index for crops other than grassland. ❑ Livestock numbers, type, species and time kept. ❑ Organic and chemical fertiliser details including imports and exports. ❑ *Evidence of a Phosphorus requirement if chemical Phosphorus fertiliser sown. ❑ Storage capacity and where applicable associated evidence to support allowances to reduce capacity. ❑ Evidence of right to graze common land.

*Not a verifiable standard under Cross-Compliance

Section 1

Nitrates Action Programme (Northern Ireland) Regulations 2006 and Phosphorus (Use In Agriculture) (Northern Ireland) Regulations 2006

Who is responsible for complying with the rules?

The 'controller' of the land is responsible for complying with the rules. The owner of land is assumed to be the controller and is responsible for the land from 1 January to 31 December unless evidence can be provided to the contrary. This evidence can either be if the tenant is claiming Single Farm Payment (SFP) on the land for that period, or if there is a written agreement between owner and tenant, establishing control of land. This agreement should clearly identify the two parties, the exact location and area of land and the calendar year(s) to which it applies. A written agreement should transfer the responsibility for compliance of the Nitrates and Phosphorus Regulations 2006 only and does not affect your other SFP obligations.

Example scenarios

	Controlled by land owner	Controlled by tenant
No SFP claimed on land	✔	
Land owner claims SFP on owned land	✔	
Land owner not claiming SFP lets land out and tenant claims SFP		✔
Land owner claiming SFP but with a written agreement transferring control and responsibility for compliance of Nitrates and Phosphorus Regulations to tenant		✔

For claimants of SFP remember that all land farmed must be included on the IACS Form.

There can be only one controller in the year. If land is farmed by farmers other than the controller it still remains the responsibility of the controller to ensure compliance. For example, if the controller allows another farmer to grow winter cereals on the land, the controller must ensure that the growing of the winter cereals complies with the Regulations.

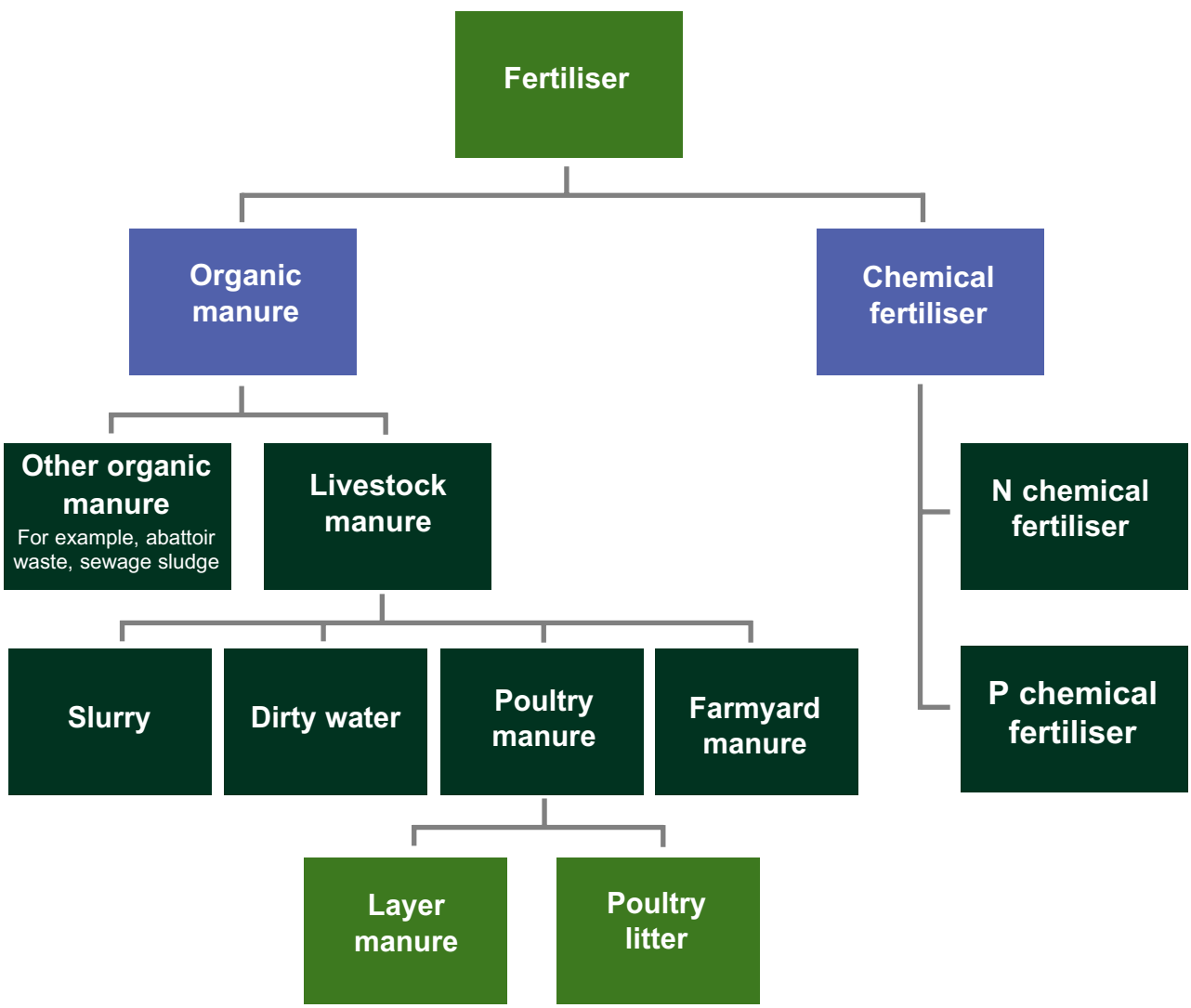
In common ground there is a collective responsibility for all farmers to comply.

Land outside Northern Ireland will have to adhere to the respective Nitrates Action Programme for that country.

What is fertiliser?

Fertiliser for the purposes of the Nitrates and Phosphorus Regulations applies to all types of fertiliser containing nitrogen and phosphorus compounds which are applied to land. It includes chemical fertiliser and all types of organic manure including livestock manure as outlined below.

Fertiliser types and how they relate to each other



1.1 Timescale

1.1.1 When do the Regulations become effective?

The NAP and Phosphorus Regulations became effective on 1 January 2007. However, to allow farmers time to meet their storage requirements the following parts of the NAP Regulations will be phased in.

As the required storage capacity is linked to the closed period for organic manure both these measures will be introduced on a phased basis.

If you have the appropriate storage capacity in place on 1 January 2007 then the Regulations will apply from that date.

If you do not have the appropriate storage capacity in place on 1 January 2007 then the measures relating to the closed period and the storage capacity will apply from the date you have the appropriate storage in place, or at the latest by 31 December 2008. However, remember that you still have a duty to prevent water pollution and should ensure that you at least have sufficient storage provision so that you do not have to spread livestock manure in the adverse weather and soil conditions as set out in 1.3.2.

All the other measures in the NAP Regulations will apply from 1 January 2007.

1.2 Closed spreading periods

Applying nutrients to grass or crops that are not growing can lead to these valuable nutrients being leached into waterways. One of the main measures within these Regulations is to prohibit the application of fertilisers containing nitrogen during the months when the risk of leaching is highest. This period is called the closed spreading period.

1.2.1 When is the closed spreading period for applying organic manure?

Must not apply from 15 October through to 31 January, except for farmyard manure or dirty water.

Organic manure includes slurry, farmyard manure and dirty water unless otherwise stated.

1.2.2 Is there a closed spreading period for farmyard manure?

No. It can be applied throughout the year, provided soil and weather conditions are suitable as set out in 1.3.2.

1.2.3 When is the closed spreading period for applying chemical nitrogen fertiliser?

Must not apply from 15 September to 31 January.

However, chemical nitrogen fertiliser can be applied to some crops other than grass during this time, if a crop need can be demonstrated. An autumn grass reseed or winter sown cereal does not require nitrogen fertiliser at sowing.

Phosphorus chemical fertiliser can be applied at any time if a need can be demonstrated.

1.3 Applying fertiliser

1.3.1 Are there restrictions on how I apply my fertiliser?

Yes. All fertiliser types must be applied as accurately and uniformly as practicably possible and must not be applied in a location or manner which would make it likely that it will directly or indirectly enter a waterway or water in underground strata.

1.3.2 Are there conditions outside the closed spreading period when I cannot apply fertiliser?

Yes. You must not apply:

- when soil is waterlogged. This is when water appears on the surface of the land when pressure is added.
- when land is flooded or likely to flood.
- when soil has been frozen for 12 hours or longer.
- when land is snow covered.
- if heavy rain is forecast within the next 48 hours.
- where land is steeply sloping with an average incline of 20% or more, and where other factors such as waterways, soil conditions, ground cover and rainfall presents a significant risk of water pollution occurring.

1.3.3 How close can I apply chemical fertiliser to waterways?

To within 1.5m of a waterway.

1.3.4 How close can I apply organic manure to waterways?

To within:
- ❑ 20 metres of lakes;
- ❑ 10 metres of any other waterway, including open areas of water, open field drains or any drain which has been backfilled to the surface with permeable material such as stone/aggregate.

However this may be reduced to three metres, provided the land has an average incline less than 10% towards the waterway, and

- the organic manures are spread by band spreaders, trailing shoe, trailing hose or soil injection;

OR

- where the adjoining area is less than one hectare in size, or not more than 50 metres in width.

- ❑ 50 metres of a borehole, spring or well; or
- ❑ 250 metres of a borehole used for a public water supply; or
- ❑ 15 metres of exposed cavernous or karstified limestone features (such as swallow-holes and collapse features).

1.3.5 Is there a maximum single application for organic manures?

Yes. To minimise the potential of run-off of nutrients the following maximum application rates apply:

Slurries	50m^3 per ha (4500 gallons/acre);
Solid organic manures	50 tonnes per ha (20 tonnes/acre).

1.3.6 How often can I apply organic manures?

A minimum of three weeks must be left between applications.

1.3.7 Does slurry have to be spread by a particular method?

Yes. Slurry must be applied close to the ground using spreaders with, for example inverted splashplate, bandspreaders, trailing shoe, trailing hose soil injection or soil incorporation methods.

Sludgigator type spreaders and upper facing splashplates **cannot** be used.

1.4 Applying dirty water

The definition of dirty water is found on page 41 and pictures to assist in visualising where dirty water could be produced are found in Annex A, page 44.

1.4.1 Is dirty water subject to a closed spreading period?

No. Dirty water may be applied to land throughout the year provided soil and weather conditions are suitable, as set out in 1.3.2. Provision for the safe storage of dirty water should be available for periods when conditions are not suitable for land application.

1.4.2 Is there a maximum single application for dirty water?

Yes, the maximum application for dirty water is 50m^3 per ha (4500 gallons/ac) in a single application.

1.4.3 How often can I apply dirty water?

A minimum period of two weeks must be left between applications of dirty water.

1.4.4 How close can I apply dirty water to waterways?

The restrictions which apply to organic manure and are set out in 1.3.4, also apply to dirty water.

1.4.5 Does dirty water have to be applied by a particular method?

Yes. Dirty water must be applied to land using the same methods that apply to slurry. Sludgigator type spreaders and upper facing splashplates **cannot** be used. However, dirty water can also be spread by irrigation.

1.5. Limits on land application of fertiliser

1.5.1 What limits are there on the land application of livestock manure?

The amount of total nitrogen in livestock manures applied to the land, including by the animals themselves, shall not exceed 170kg N per hectare (ha) per year as required by the Directive. The amount of nitrogen excreted annually by various types of livestock is found in Annex B, page 47. Totalling these nitrogen excretions for the livestock on a farm and dividing by agricultural area controlled gives the livestock manure nitrogen per ha.

In Northern Ireland approximately 90% of farms are under this limit. Only intensive farms tend to exceed this limit. A ready reckoner table is found in Annex C, page 59 which indicates the approximate land area required for some enterprises.

If you are above the 170kg N/ha/year limit taking additional land, exporting livestock manure or reducing stock will reduce the N/ha. Annex D, page 60 shows how to calculate the amount of livestock manure that could be imported or exported to meet the 170kg N/ha/year limit.

1.5.2 Other Member States allow specific farmers to operate above 170kg N/ha/year. Is this applicable in Northern Ireland?

Yes. The Directive allows individual Member States to make an application, to apply an amount higher than 170kg N/ha/year from livestock manure. This is referred to as a derogation. The derogation must be supported by scientific evidence demonstrating that the application of a higher amount does not compromise the objective of the Action Programme to reduce the nitrogen input from agriculture to Northern Ireland's waters. A Northern Ireland derogation to apply up to 250kg livestock manure nitrogen per hectare per year to the land in specific circumstances by individual farmers is being progressed for grassland cattle farms and is subject to European Union (EU) approval. Farms operating under any possible future derogation will need to adopt additional nutrient management measures.

1.5.3 What area of land do I use to calculate this limit?

The area of land used for the calculation of the 170kg N per ha per year limit is called the agricultural area. To be included, the land must be suitable for agricultural activities, including any common land used for grazing, and excludes areas under farm roads, paths, buildings, woodland, dense scrub, rivers, streams, ponds, lakes, sandpits, quarries, areas of peat cutting, bare rock, areas of forestry, and areas fenced off or inaccessible other than forests which are farmed as part of the agricultural business. Land used for Short Rotation Coppice, Christmas trees or orchards can be included.

Written documentation confirming grazing rights to common land and the area will be required if common land is to be used.

1.5.4 How is this livestock manure nitrogen loading calculated?

To calculate the livestock manure nitrogen loading:

Total the nitrogen excretions for the livestock on the farm and divide by the agricultural area controlled. The steps involved are:

- Calculate the average stock numbers based on a minimum of alternate months of the year.
- Multiply the amount of nitrogen excreted by the stock type by the average stock numbers.
- Total the nitrogen excreted from all the various livestock types.
- Adjust nitrogen total by adding the nitrogen contained in any imported manures or subtract the nitrogen contained in any exported manures.
- Divide total nitrogen by the agricultural area controlled.

Example: A 46ha farm with a 50 cow suckler herd and 150 sheep flock

Stock type	**N excretion per animal (kg)**	**Total N excretion (kg)**
50 Suckler cows	54	2700
48 calves under 1year	19	912
150 ewes	9	1350
141 lambs up to 6 months	1.2	169
	Total	= **5131**
Imported (100m^3 (22,000 gallons) of pig slurry)		+400
Exported manure		- 0
	Total	= 5531kg
Livestock manure nitrogen per ha		= 5531kg N/46ha
		= 120kg N/ha

An example of a completed worksheet is found in Annex B, page 47. A blank worksheet can be found in the Guidance Workbook which is available from DARD offices and at CAFRE information meetings. For further information on these meetings please contact CAFRE (see Annex T, page 97).

Alternatively, you can access the 'Livestock Manure Nitrogen Loading Calculator' at www.ruralni.gov.uk or download a Guidance Workbook at www.dardni.gov.uk and www.ehsni.gov.uk.

1.5.5 Can I apply other organic manures such as sewage sludge and abattoir waste?

Yes. However, you should be aware that most of these products (including sewage sludge, abattoir waste and fish farm residues) which fall within the definition of organic manure, also fall within the scope of waste legislation when applied to land for agricultural benefit. In such cases, an exemption from waste management licensing is required from Environment and Heritage Service (EHS) (see contact page). The application of these manures is restricted to grass/crop requirement for both nitrogen and phosphorus, and the farmer must provide evidence of the nitrogen and phosphorus content. In the case of these organic manures the percentage availability stated in Annex E, page 61, which increases over time, must be used.

1.5.6 What limits are there on the land application of nitrogen fertiliser for grassland?

Chemical fertiliser and organic manures cannot be applied above the grassland requirement for nitrogen. These maximum limits are in accordance with the fertiliser technical standards which are currently found in RB209 and at www.defra.gov.uk.

Very few farms in Northern Ireland will be affected by the maximum nitrogen application limits.

Average nitrogen limits for grassland area

The maximum amount of nitrogen fertiliser from chemical fertiliser and organic manures other than livestock manures that can be applied on the grassland area depends on the type of livestock on the farm. When calculating the livestock manure nitrogen loading, see 1.5.4, if more than 50% of the annual total nitrogen in livestock manures comes from dairy cows and dairy heifer replacements, use the dairy farm nitrogen limit. All other livestock farms must use the other livestock farm nitrogen limit.

The maximum amount of nitrogen from chemical fertiliser and organic manure other than livestock manure that can be applied per year over the whole grassland area during the four year period of the Action Programme is:

	Maximum kg N/ha Year		
	2007	**2009**	**2010**
Dairy farms	289 ($8\frac{3}{4}$ bags/ac)*	281 ($8\frac{1}{2}$ bags/ac)	272 ($8\frac{1}{4}$ bags/ac)
Other livestock farms	239 ($7\frac{1}{4}$ bags/ac)	231 (7 bags/ac)	222 ($6\frac{3}{4}$ bags/ac)

* Approximate number of 50kg bags of a 27% N type product.

The maximum amount of nitrogen fertiliser for grassland takes into consideration the application of livestock manures regardless of type. Therefore livestock manures applied to grassland **should not** be subtracted from the grassland limits. However, if other organic manures, other than livestock manures, for example sewage sludge are applied, the nitrogen from this manure must be subtracted.

The nitrogen limits are maximum nitrogen limits for the whole area of grassland, and not individual fields. There is no specific nitrogen limit for silage, grazing or reseeding areas. Compliance can be checked, as shown in Annex F, page 62, through dividing the amount of nitrogen applied to grassland by the area of grassland.

For example :
A 46ha farm with a suckler herd and sheep flock applies 30t of a 27% N type fertiliser on 40ha of grassland. This would equate to 202kg N/ha. (30t x 27% ÷ 40ha)

A ready reckoner in Annex G, page 64 gives guidance as to the approximate tonnage limits per farm for a particular fertiliser type.

(The maximum kg N/ha limits for grassland assumes that slurry contributes 51kg N/ha, 60kg N/ha and 68kg N/ha for the years 2007, 2009 and 2010 respectively. On crop farms with intensive grassland the nitrogen requirement for grassland could be exceeded if a high proportion of the livestock manure is applied to the grassland area. Therefore, the maximum amount of nitrogen for the grassland should be reduced to fully account for the amount of livestock manure applied).

It is recommended that on moderately or low stocked farms, lower nitrogen rates should be used. Certain habitat grassland areas may have significantly lower limits or fertilisation may be prohibited if under an agri-environment scheme.

1.5.7 What limits are there on the land application of nitrogen fertiliser for crops?

Average nitrogen limits for crop area

Similar to grassland the nitrogen limits are maximum nitrogen limits not for individual fields, but the nitrogen averaged over the whole area of the crop. For example, the whole area of spring barley or whole area of potatoes. Again, very few farms in Northern Ireland will be affected by these maximum nitrogen application limits.

For crops other than grass the maximum kg per hectare of nitrogen fertilisers for crop requirement that can be applied must be in accordance with the fertiliser technical standards which are currently found in RB209, www.defra.gov.uk, and extracts for some common crops in Northern Ireland are provided in the Annexes in this guidance. The nitrogen fertiliser requirement for crops is influenced by the previous crop, its management, amount of rainfall and soil type. From the table in Annex H, page 65, the level of residual nitrogen within the soil and available for the next crop can be established. This nitrogen is called the Soil Nitrogen Supply (SNS) and is expressed as an index. Using the most appropriate SNS index for the crop area the maximum nitrogen application for crop requirement of the common crops in Northern Ireland can be determined from the tables in Annex I, page 67.

If organic manures are to be applied to the crop area the nitrogen available from these manures must be subtracted from the maximum nitrogen application rate. An increasing level of available nitrogen from these manures must be allowed over time as outlined in Annex E, page 61.

An example of a completed worksheet is found in Annex J, page 70. A blank worksheet can be found in the Guidance Workbook which is available from DARD offices and at CAFRE information meetings. For further information on these meetings please contact CAFRE (see Annex T, page 97).

1.5.8 Are there limits on the land application of chemical P fertiliser?

Yes. Chemical phosphorus (P) fertiliser must not be applied unless there is a requirement, taking account of the soil fertility status, and the supply of phosphorus from the application of organic manures. Soil fertility status can only be established through a soil test. The application of chemical phosphorus is limited to the individual fields or area sampled.

1.5.9 How should a soil sample be taken?

Samples can be taken by farmers. The following procedures must be followed.

Area to sample: The size of the area from which one sample can be taken varies, but must not be more than four hectares. Generally one sample shall be collected from each field. Within one field, areas which are not uniform for crop growth and areas which have been cropped or fertilised differently must be sampled separately.

Time of sampling: Sampling every fourth year is satisfactory as a basis for phosphorus fertiliser recommendations. A field must not be sampled for phosphorus until at least three months after the last application of any fertiliser (organic or chemical) containing this nutrient.

Depth of sampling: Grassland must be sampled to a depth of 75mm and arable land to a depth of 150mm.

Method of sampling: A soil sample must be made up by bulking at least 25 sub-samples taken from the area to be sampled. The sub-sampling points must be selected systematically to give an even distribution over the whole sampling area. This distribution shall be achieved by following the pattern of a letter 'W' and taking sub-samples at regularly spaced intervals. Taking sub-samples from headlands, dung and urine patches, areas where stock gather or other unusual features must be avoided. Each sub-sample must be taken using a soil auger which takes an even core of soil throughout the sampling depth. The soil sample must be stored in a clean, labelled plastic bag.

Who can test the sample: Analysis must be carried out by a soil-testing laboratory, competent to analyse soils for phosphorus. Each analysis, provided by the competent laboratory, will require a UKAS accreditation or (National equivalent) statement.

1.5.10 How do I determine a requirement for phosphorus?

The soil test determines the phosphorus index of the soil. Using this index the crop requirement for phosphorus applications, as per the fertiliser technical standards (RB209), for some common crops in Northern Ireland can be found in Annex K, page 73.

An example of a completed worksheet is found in Annex L, page 74. A blank worksheet can be found in the Guidance Workbook which is available from DARD offices and at CAFRE information meetings. For further information on these meetings please contact CAFRE (see Annex T, page 97).

If organic manures are to be applied, the phosphorus available from these manures must be subtracted from the maximum phosphorus (P_2O_5) application rate. The phosphorus (P_2O_5) content of livestock manures is provided in Annex E, page 61. The phosphorus (P_2O_5) in manures is 100% available. The phosphorus content per tonne of other organic manures excluding livestock manure shall be as declared in accordance with the Waste Management Licensing Regulations (Northern Ireland) 2003 and any subsequent amendments.

1.5.11 Can I still apply livestock manures if there is no requirement for phosphorus?

Yes. Livestock manures can be applied as the Phosphorus Regulations only apply to chemical phosphorus fertiliser. However, if any other organic manures are imported ensure that applications adhere to 1.5.5.

1.5.12 Can I deviate from the standard nitrogen excretion values, and nutrient content values for livestock manures?

Yes. However, any farmer wishing to deviate from the standard values must obtain prior approval from EHS based on a scientific case. Contact EHS for detail on procedures.

1.6 Storing livestock manure

1.6.1 What storage do I require on my farm?

You must provide adequate storage to cover the closed spreading period set out in 1.2.1 and to take account of weather and soil conditions set out in 1.3.2.

The minimum requirement is 22 weeks for livestock other than pigs and poultry (see 1.7). However, there are exceptions to this which are covered in subsequent sections.

All storage facilities for livestock manure must be maintained free of structural defect and must be of a standard necessary to prevent run-off or seepage, directly or indirectly, into a waterway or water contained in underground strata.

1.6.2 If I require new slurry tanks/middens to be constructed or enlarged, what standard is required?

All new slurry or silage storage facilities, or existing slurry or silage storage facilities to be substantially enlarged or substantially reconstructed (after 1 December 2003), with or without DARD funding, must comply with the British Standards specified in The Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) (SSAFO) Regulations (Northern Ireland) (2003) as amended.

Detailed guidance on the requirements of the SSAFO Regulations can be obtained from EHS using the contact details provided in Annex T, page 97.

Middens must have adequate effluent collection and storage facilities. Effluent (run-off) from farmyard manure and poultry litter is considered slurry under SSAFO and the Nitrates Action Programme Regulations. Hence, if the effluent containment facilities are new, or substantially enlarged or substantially reconstructed (after 1 December 2003), they must comply with the British Standards specified in the SSAFO Regulations and amending Regulations.

1.7 Storing pig and poultry manure

1.7.1 What storage requirements must a pig and/or poultry farmer provide?

A farmer with more than 10 breeding sow places or 150 finishing pig places, or a farmer with more than 500 poultry places must provide a minimum of 26 weeks storage capacity. However, where a farm has a pig enterprise with less than 10 breeding sow places, or less than 150 finishing pig places or where a poultry enterprise has less than 500 poultry places, a minimum of 22 weeks storage shall be required.

1.7.2 What storage requirements must a mixed livestock farm provide?

Where a farm has a pig and/or poultry enterprise and another livestock enterprise it must have 26 weeks storage for the pig and/or poultry enterprise and 22 weeks storage for the other livestock enterprises on the farm.

1.8 Storing farmyard manure

1.8.1 Where can I store farmyard manure?

Farmyard manure should be stored in a midden with adequate effluent collection and storage facilities. If the effluent containment facilities are new, or substantially enlarged or substantially reconstructed (after 1 December 2003), they must comply with the British Standards specified in the SSAFO Regulations.

Farmyard manure may also be stored in a compact heap in the field where land application will take place until the next application but for no longer than 180 days. It must not be stored in the same location of the field year after year.

1.8.2 Are there any restrictions on where I can store farmyard manure heaps in relation to waterways or underground strata?

Farmyard manure heaps must not be stored within:

- 50 metres of lakes; or
- 20 metres of any other waterway, including open areas of water, open field drains or any drain which has been backfilled to the surface with permeable material such as stone/aggregate; or
- 50 metres of a borehole, spring or well; or
- 250 metres of a borehole used for a public water supply; or
- 50 metres of exposed cavernous or karstified limestone features (such as swallow-holes and collapse features).

1.9 Storing poultry litter

1.9.1 Where can I store poultry litter?

Until 31 December 2008, when the position will be reviewed, poultry litter may be stored in a midden or in the field where land application will take place until the next application, but for no longer than 180 days. The poultry litter must be stored in a compact heap and covered with an impermeable membrane within 24 hours of placement in the field. It must not be stored in the same location of the field year after year.

Where poultry litter is stored in a midden, adequate storage facilities with effluent collection must be provided prior to field storage. If the effluent containment facilities are new, or substantially enlarged or substantially reconstructed (after 1 December 2003), they must comply with the British Standards specified in the SSAFO Regulations, regardless whether they were or were not grant funded by DARD.

1.9.2 Are there any restrictions on where I can store poultry litter heaps in relation to waterways or underground strata?

Poultry litter heaps must **not** be stored within:

- 50 metres of lakes; or
- 20 metres of any other waterway, including open areas of water, open field drains or any drain which has been backfilled to the surface with permeable material such as stone/aggregate; or
- 50 metres of a borehole, spring or well; or
- 250 metres of a borehole used for a public water supply; or
- 50 metres of exposed cavernous or karstified limestone features (such as swallow-holes and collapse features).

1.10 Allowances when calculating the livestock manure storage capacity

The following allowances can be taken into consideration when calculating storage requirements. These rules only apply to those who wish to include these allowances to meet the storage requirement.

1.10.1 Can slurry produced on bedded accommodation be excluded when calculating livestock manure capacity?

The quantity of slurry produced by animals housed in bedded accommodation and collected as farmyard manure, for the 22 week period, between 1 January to 28 February and 1 October to 31 December does not need to be taken into account when calculating a farm's slurry storage capacity provided that:

- the bedded accommodation has the appropriate area for the number of stock accommodated as detailed in Annex M, page 76;
- the bedded accommodation has adequate effluent collection facilities to prevent water pollution;
- where the farmyard manure is stored in a midden, there must be adequate effluent collection and storage facilities for the duration of the closed period;
- where bedded animals have access to a solid or slatted area where slurry is collected, only 50% of the slurry/manure produced by those animals can be allocated to farmyard manure.

  (For example, where 40 animals are housed on straw bedding but have access to a solid or slatted area for feeding, slurry storage will be required for the equivalent of 20 animals while the total manure produced from 20 animals can be regarded as farmyard manure production).

1.10.2 Can separated solids be excluded when calculating livestock manure storage capacity?

For all livestock slurries, except pig slurry, removing the solids from slurry reduces the volume and the storage requirement. The maximum volume reduction allowed is 20%. The separated liquid cannot be spread during the closed periods. In the case of cattle slurry, the solid fraction can be applied throughout the year, provided soil and weather conditions are suitable as set out in 1.3.2.

1.10.3 Can rented manure storage facilities be included when calculating livestock manure storage capacity?

Yes. Additional tanks can be rented to assist in meeting the storage requirements, provided the following conditions are met:

- a rental agreement containing details of the rented facilities is held on record Annex N, page 77; and
- the storage facility is free of structural defect and complies with the British Standards specified in the SSAFO Regulations.

If the rented storage facility is no longer available, it is the responsibility of the farmer to meet the minimum storage requirements.

The owner of the storage facility should be aware of the increased bio-security risks to any stock on his premises. If there is an outbreak of a notifiable disease on the farm of origin of the slurry, or on the farm receiving the slurry, there may be consequences for each herd owner. This may include restrictions and testing.

1.10.4 Can livestock manure that is exported to be processed, treated or recovered be excluded when calculating livestock manure storage capacity?

Yes. Excluding separation, as per 1.10.2, livestock manure treatments such as composting, pelletising, fertiliser production, anaerobic digestion, gasification and incineration can be excluded. A valid contract with a manure processing facility or evidence of access to an approved treatment or recovery outlet must be held on record. An example is found in Annex O, page 79.

1.10.5 Can manure produced from out-wintered livestock be excluded when calculating livestock manure storage capacity?

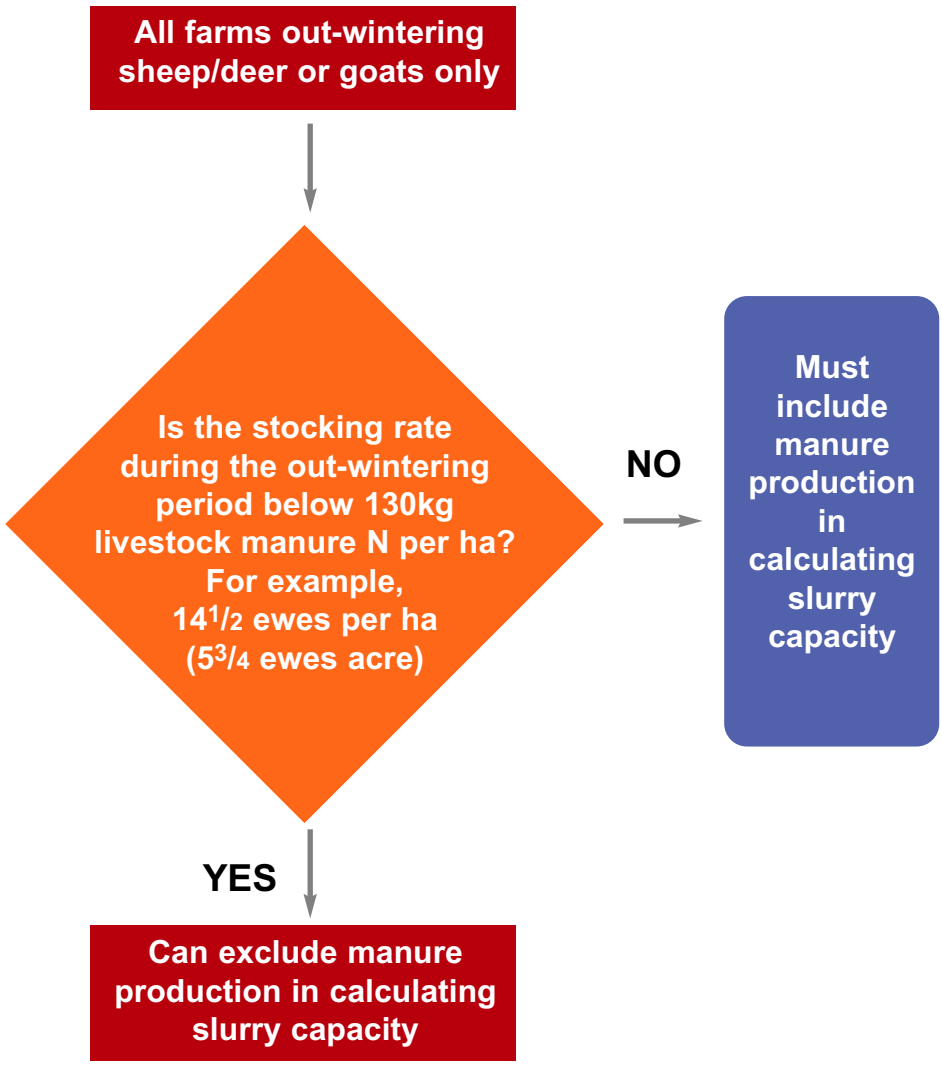
Yes. Manure can be excluded depending on type of livestock out-wintered, the annual stocking rate and the stocking rate on the out-wintered area. For the manure to be excluded the livestock must be out-wintered on grassland. (Manure from **dairy cows** cannot be excluded).

The stocking rate is expressed as an amount of livestock manure nitrogen per ha and is calculated using the annual amount of nitrogen excreted divided by the area of grassland used for out-wintering.

The out-wintering period is the 22 week period of 1 January to 28 February and 1 October to 31 December.

1.10.6 What stocking rates must be adhered to, to exclude manure from the livestock manure storage capacity calculations?

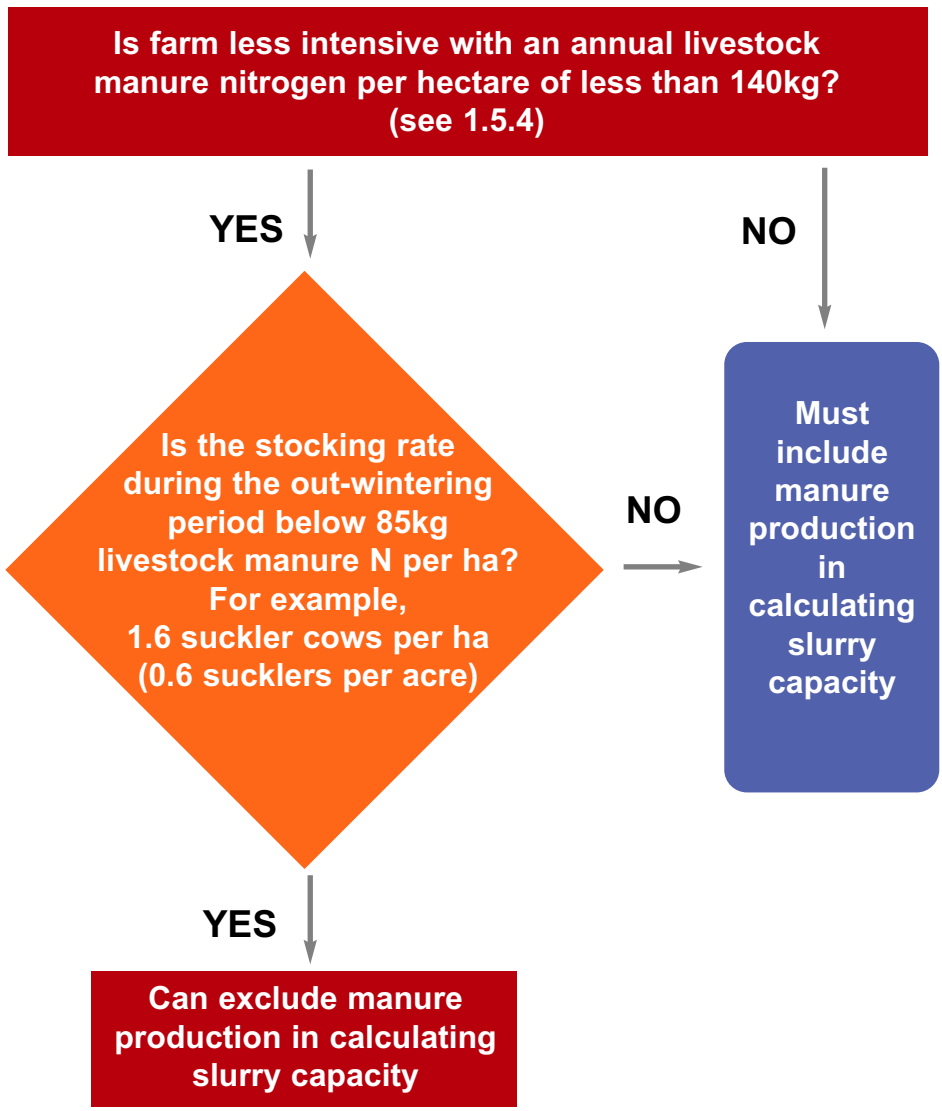
(a) Farms wishing to exclude manure from storage calculation and out-wintering sheep/deer and goats only



Example: Out-wintering 150 ewes on 40ha of grassland

Stock type	Number	N excretion rate	Total N excretion
Suckler cow	0		
Cattle <1 year	0		
Ewes	150	9	1350
Lambs <1 year	0		
Total			**1350**
Stocking rate per ha during out-wintering period			**= 1350kg N/40ha** **= 34kg N/ha**

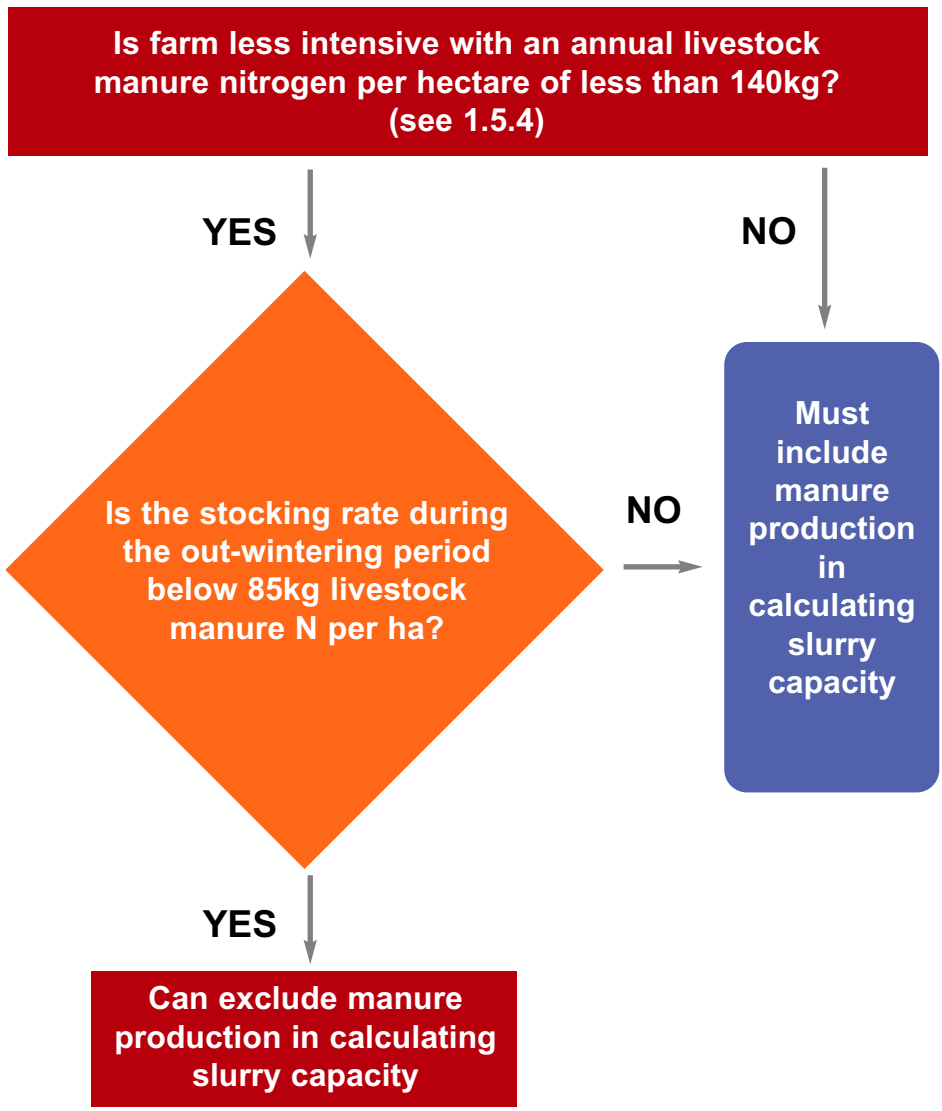
(b) Farms wishing to exclude manure produced from out-wintered cattle from storage calculation (excluding dairy cows)



Example: Out-wintering 50 suckler cows on 40ha of grassland

Stock type	Number	N excretion rate	Total N excretion
Suckler cow	50	54	2700
Cattle <1 year	0		
Ewes	0		
Lambs <1 year	0		
Total			**2700**
Stocking rate per ha during out-wintering period			**= 2700kg N/40ha** **= 68kg N/ha**

(c) Farms wishing to exclude manure from out-wintered cattle (excluding dairy cows) and sheep from storage calculation and less than 50% of livestock manure nitrogen during the out-wintered period comes from sheep.

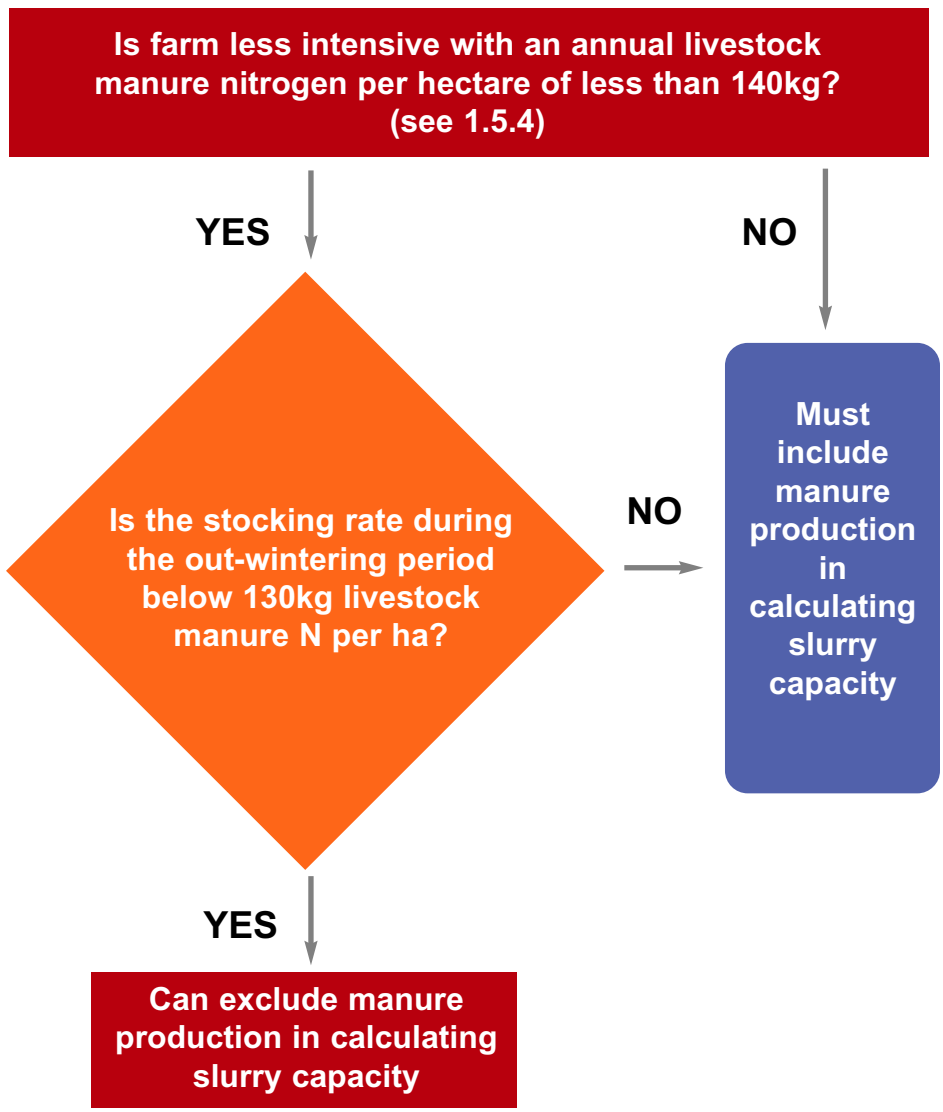


Example: Out-wintering 30 suckler cows and 150 ewes on 40ha of grassland

Stock type	Number	N excretion rate	Total N excretion
Suckler cow	30	54	1620
Cattle <1 year	0		
Ewes	150	9	1350*
Lambs <1 year	0		
Total			**2970**
Stocking rate per ha during out-wintering period			**= 2970kg N/40ha** **= 74kg N/ha**

* Sheep nitrogen excretion less than 50% of total nitrogen excretion therefore 85kg N/ha limit applies

(d) Farms wishing to exclude manure from out-wintered cattle (excluding dairy cows) and sheep from storage calculation and more than 50% of livestock manure nitrogen during the out-wintered period comes from sheep.



Example: Out-wintering 30 suckler cows and 150 ewes on 40ha of grassland

Stock type	Number	N excretion rate	Total N excretion
Suckler cow	10	54	540
Cattle <1 year	0		
Ewes	150	9	1350*
Lambs <1 year	0		
Total			**1890**
Stocking rate per ha during out-wintering period			**= 1890kg N/40ha** **= 47kg N/ha**

* Sheep nitrogen excretion more than 50% of total nitrogen excretion therefore 130kg N/ha limit applies

1.10.7 Are there any restrictions on a farm out-wintering within the 130kg and 85kg grassland stocking rates?

Yes. If livestock are being out-wintered, the farmer must ensure that they have free access at all times to the required land area. Areas can be blocked grazed for management reasons but all of the required land area must be grazed during the out-wintering period. Manure produced on an area less than the required area or on stand-off pads/corrals cannot be excluded when calculating storage capacity.

The land must be maintained in good agricultural and environmental condition (see DARD Cross-Compliance Verifiable Standards Booklets) and the reduction in storage must be proportionate to the number of out-wintered livestock on the holding. The land used for the purposes of out-wintering must be under the control of the holding to which the exemptions are to apply.

1.10.8 How do I calculate my livestock manure storage capacity?

An example of a completed worksheet is found in Annex P, page 80. A blank worksheet can be found in the Guidance Workbook which is available from DARD offices and at CAFRE information meetings. For further information on these meetings please contact CAFRE (see Annex T, page 97).

Alternatively, you can access the 'Livestock Manure Nitrogen Loading Calculator' at www.ruralni.gov.uk or download a Guidance Workbook at www.dardni.gov.uk or www.ehsni.gov.uk.

1.11 Cover in winter

1.11.1 Do I have to manage soil after cropping?

After harvesting a crop of cereals (other than maize), oil seeds, grain legumes (for example, peas or beans), ensure that from harvest until 1 March in the following year one of the following conditions is met on that land at any time:

- the stubble of the harvested crop remains in the land; or
- the land is sown with a crop which will take up nitrogen; or
- the land is left with a rough surface, ploughed or disced; to encourage the infiltration of rain.

1.11.2 What about late crops?

Residues of crops harvested late, such as maize and potatoes shall be left undisturbed until just before sowing the following spring.

1.11.3 Do I have to manage soil after grass leys are ploughed?

Where grass leys are grown in rotation with arable crops, the first crop should be sown as soon as possible after the grass has been ploughed to minimise the loss of nitrogen.

1.12 Record keeping

1.12.1 What period do I have to keep records for?

Records must be kept on an annual basis for the period 1 January to 31 December. These annual records must be prepared by 30 June of the following year and be retained for a period of five years. For example, for the 2007 calendar year records must be prepared by 30 June 2008.

1.12.2 What records do I have to keep?

The information/records required are listed on page 33. The inspection process will, with the recommended records sources and the technical content and format contained within this Guidance Booklet, calculate and ascertain whether compliance has been achieved.

For example, the requirements for record keeping of many farmers will be met if they provide a copy of an IACS form, a herd/flock register along with fertiliser details such as detailed invoices and noting the size of livestock manure facilities. This information will then allow the inspection authority to ascertain whether compliance has been achieved. The level of records required will be dictated by the circumstances found on farms. The table on page 33 outlines what records are required and recommends various sources where this information can be found.

1.12.3 Do I have to calculate the various limits for my farm?

It is not a requirement to calculate the various limits such as the livestock manure nitrogen loading, chemical nitrogen and chemical phosphorus application rates and the number of weeks storage capacity on farm but without doing so, farmers may be unaware of their position and may be in breach of the Regulations.

Record requirements and recommended record sources

Record Requirements	Recommended record sources
Agricultural area including size and location of each field **Cropping regimes and their individual areas**	• Copy of relevant IACS form. In the absence of an IACS form a DARD farm map indicating agricultural area and size and location of each field. • If growing crops note type of crops, for example, grass, spring barley, winter wheat and record on IACS form or DARD farm map. • Provide evidence of control of land if not owner, for example, SFP claimant or written agreement. • Provide evidence of the rights of use and area of common land if applicable.
Numbers of livestock kept on the farm, their species and type, and length of time kept on farm	• Cattle - DARD Herd Register for Bovine Animals • Sheep - DARD Flock Register • Pigs - DARD Herd Register for Pigs • Poultry - Company audit records Welfare Legislation records Quality assurance records Egg marketing legislation records **or** • APHIS accessed at www.dardni.gov.uk. **or** • Enterprise management software. **or** • Numbers recorded as example in Annex B, page 47. Stock numbers should be taken at least on the 1st day of each alternate month. For example, 1 Feb, 1 Apr, 1 Jun, 1 Aug, 1 Oct, 1 Dec.
Amount and type of imported/ exported organic manures, date imported/exported, name and address of the person providing/receiving the manure and name and address of transporter if different person	• Recorded as per example in Annex Q, page 94. • N content of organic manures not being livestock manure as declared in accordance with the Waste Management Licensing Regulations (Northern Ireland) 2003 and any subsequent amendments. • Waste transfer note and copy of exemption from waste management licensing where appropriate.

Record Requirements	Recommended record sources
Fertiliser details (As per example in Annex R, page 95)	• The tonnage and N and P content of all fertiliser stocks on 1 January. • Dated fertiliser invoices or receipts showing certified N and P content of chemical fertiliser and tonnage bought/sold. • The tonnage and N and P content of fertiliser imported in and exported off the farm. • The tonnage and N and P content of all fertiliser stocks on 31 December of the same calendar year.
Livestock manure capacity	• On farm confirmation of storage capacity for example, dimensions of tanks 25m by 4m by 1.8m, 10m by 8m by 1.8m. • Numbers and length of time livestock housed during winter (Annex P, page 80). • Numbers, type and length of time livestock out-wintered (Annex P, page 80). • Note on IACS form or DARD farm map area and location of land used to out-winter. • Numbers, type and length of time livestock bedded (Annex P, page 80). • Note amount of cattle slurry separated (Annex P, page 80). • Rental agreements providing details of rented tanks (Annex N, page 77). • Valid contractual agreements with processing facilities or evidence of access to an approved treatment or recovery outlet (Annex O, page 79). • An approved FNMS application.
Record Requirements	**Recommended record sources if growing crops other than grass**
Soil nitrogen supply index for cropping areas other than grassland	• Previous crop grown if fertilising crops other than grass • Soil type in accordance with fertiliser technical standards (Annex H, page 65).

Record Requirements	Recommended record sources if applying chemical P fertiliser
Size and location of each field to which chemical P fertiliser applied	• Copy of relevant IACS form. In the absence of an IACS form a DARD farm map indicating size and location of each field to which chemical P fertiliser applied.
Type of crop sown	• Type and date of crops grown in above fields noted on IACS form or DARD farm map.
Results of P soil test	• Above map indicating fields sampled or soil sample results showing field identification details. • Results of soil analysis with United Kingdom Accreditation (or National Equivalent) statement for the phosphorus soil test and relating sampling site to Olsen extractable phosphorus content and soil phosphorus index.
P fertiliser details	• Type and quantity of all fertilisers containing P (chemical and organic including livestock manures) applied to the field to which chemical P fertiliser applied (Annex L, page 74). • Date all of the above where applied and P content of all of the above.
Statement of foreseeable P requirements of the crop	• Soil P index for the crop according to fertiliser technical standards. • Chemical P recommendation for the crop from fertiliser technical standards taking all of the above factors into account.

Section 2

Inspection and Enforcement

2.1 Who will be responsible for inspection and enforcement?

Inspection and enforcement of the NAP and Phosphorus Regulations will be carried out by Environment and Heritage Service (EHS), an agency within the Department of the Environment. Their staff will carry a warrant card that authorises them to carry out inspections and displays a photograph to identify them. EHS aims to protect and conserve the natural and built environment and to promote its appreciation for the benefit of future generations. One of the ways that EHS will seek to achieve this aim is through the consistent and fair application of legislation. They will work co-operatively with those they regulate and will offer information and advice where appropriate.

2.2 Which farms will be inspected?

EHS may inspect farms for a number of reasons. As stated previously the Nitrates Directive is one of the Statutory Management Requirements under Cross-Compliance and EHS is the competent control authority to carry out these inspections. There is also a requirement under the Directive to report to the European Commission on the effectiveness of the NAP Regulations including compliance with the measures. EHS will carry out a risk assessment to identify a list of farmers who will be visited under Cross-Compliance. At least 1% of farms claiming Single Farm Payment must be inspected each year and this percentage may be increased, depending on the extent of non-compliance. In addition, EHS must follow up on any breaches of the NAP Regulations that they witness or that are reported to them by other people.

2.3 What about bio-security on my farm?

All EHS staff carrying out farm visits will have equipment to disinfect their vehicle and footwear prior to entering and leaving your farm. EHS staff will also follow a health and safety risk assessment protocol during their farm visit. Where your health and safety or bio-security requirements exceed EHS protocols staff will comply with your requirements.

2.4 Will I be given notification of an inspection visit?

There is no requirement for EHS to provide advance notice of on farm inspections. However, provided that the purpose of the inspection is not jeopardised EHS will, where possible, contact you to arrange a date for an inspection visit. This, however, is not always possible, for example, when there is ongoing pollution or a risk of pollution. When EHS has contacted a farmer in advance of an inspection visit, the farmer will be given the opportunity to provide records prior to the visit which may reduce the amount of time spent on the farm.

2.5 What will happen during an inspection visit?

Firstly the EHS inspector will want to discuss with you or your representative the extent of the farm business, your awareness of the requirements, the risks on your farm and how you have made decisions on your farm.

Secondly, your records will need to be available for inspection. You must keep records from the 1 January 2007 under the new NAP and Phosphorus Regulations. These records must be compiled for each calendar year and must be ready for inspection by 30 June of the following calendar year. For example, the records for the calendar year 1 January 2007 to 31 December 2007 must be ready for inspection by 30 June 2008. You must retain the records for the last five calendar years or from the 1 January 2007 whichever is the shorter. You must have the records under the NAP Regulations ready for inspection when EHS visit. If you have applied chemical phosphorus fertiliser since 1 January 2007 EHS may request to see the relevant records for that application(s). These can be produced at the time of the visit or EHS will write to you requesting that the records are supplied by a particular date.

Thirdly, EHS staff will want to inspect the land and relevant farm facilities such as slurry stores. They will want you to accompany them during their inspection. EHS staff may also, where necessary, take samples and photographs.

Finally, EHS staff will provide informal feedback to you at the end of the visit. They will highlight any areas of concern/non-compliance and seek to agree remedial action, if necessary, with you. The EHS inspector will be completing a form during the visit. At the end of the visit you will be given the opportunity to read the form, make comments on it and sign it. You can also be provided with a copy of the form after the visit on request from EHS.

2.6 What happens after an inspection visit?

Following an inspection visit EHS will provide written feedback. Where there is no or little evidence of non-compliance this letter will confirm the findings of the visit and any areas of minor improvement that may be required.

2.7 What happens if my farm is non-compliant?

EHS will seek to work co-operatively with farmers to secure improved practice on the farm. EHS acknowledges, however, that unfortunately enforcement action will need to be taken in some cases to ensure compliance. Any enforcement action will be in accordance with EHS's Enforcement and Prosecution Policy for Environmental Protection which can be found on www.ehsni.gov.uk or you can contact EHS. See Annex T, page 97.

Under this policy EHS will endeavour to be:

- consistent and impartial;
- proportionate in its actions; and
- transparent in its activities.

The action taken in relation to non-compliance will depend on the circumstances of each individual case and a number of factors including severity, extent, permanence and repetition of the non-compliance.

EHS may issue a warning letter which will confirm any areas of concern/non-compliance and the remedial action required within a given timescale. It will also inform you about any follow-up visit.

In some cases a statutory notice may be served on the farmer. This notice will detail the action required within a stated timescale of no less than 28 days. EHS may at any time withdraw the notice, extend the period for compliance, or modify the requirements of the notice with the consent of the farmer.

2.8 Offences and penalties

EHS may also initiate prosecution procedures. Under the NAP and Phosphorus Regulations it is an offence for any person to:

- obstruct, refuse or fail to assist EHS staff or staff carrying out duties on behalf of EHS in relation to the inspection and enforcement of the Regulations.
- fail to comply with the measures under the NAP and Phosphorus Regulations;
- compile and provide false or misleading records; or
- fail to comply with a statutory notice as described above.

Anyone found guilty of these offences shall be liable, on summary conviction, to a fine not exceeding £5,000 or, on conviction on indictment, to a fine or to imprisonment for a term not exceeding two years or both.

Breaches of the NAP Regulations will also be reported to the Department of Agriculture and Rural Development (DARD) who will be responsible for applying any reductions in your Single Farm Payment or other direct subsidy claims under Cross-Compliance.

2.9 Exceptional circumstances

Under certain exceptional circumstances, beyond the control and not foreseeable by the farmer, for example, disease control restrictions, a defence can be made to some of these offences.

The measures to which this defence could be applied are the entry of fertiliser into waterways or groundwater (section 1.3.1), the closed spreading period for organic

manures (section 1.2.1), spreading organic manures in adverse weather conditions and on steeply sloping ground (section 1.3.2), limits on the quantity and time between solid organic manure, slurry and dirty water applications (sections 1.3.5, 1.3.6, 1.4.2, 1.4.3) and the 170kg N/ha/year livestock manure limit. However, it should be emphasised that the onus will be on the farmer to take all reasonable precautions to manage these situations.

2.10 Can I appeal any of these decisions?

If you are served with a notice you can appeal to the Water Appeals Commission within 28 days from the date on which the notice was served. The appeal should contain, or be accompanied by, a statement of the grounds of the appeal. The Water Appeals Commission has powers that include being able to:

- require the withdrawal of the notice;
- modify any of its requirements; or
- dismiss the appeal.

Farmers may wish to consider taking legal advice before making an appeal. Legal advice would be sought at your own expense. Any queries on the legal interpretation of the Regulations and on their enforcement should be made to EHS.

2.11 Appeals against reduction of subsidy

If you are notified by DARD of a decision to reduce your Single Farm Payment or other direct subsidy payment as a consequence of non-compliance identified against the Cross-Compliance requirements you have a right to appeal. Details of the appeals procedure will be sent to you with the letter advising you of the breach and subsequent penalty. An information leaflet on the Single Farm Payment appeals procedure and application forms are available on request from:

The Single Farm Payment Appeals Section
Orchard House
40 Foyle Street
Derry/Londonderry
BT48 6AT
Tel: 028 7131 9900
Fax: 028 7131 9800
E-mail: gspd.sfps@dardni.gov.uk

2.12 How do I complain if I am not happy with what a member of EHS staff does?

We hope you never have a reason to complain about a service we provide, but we realise that problems may sometimes arise and things can go wrong. We want you to tell us about your complaint so that we can investigate it. If we have made a mistake we will apologise and try to put things right. We will do everything possible to improve the service we provide.

EHS has set up a complaints procedure to tell you about your right to complain, how to make a complaint and how we will deal with it. This can be found on www.ehsni.gov.uk or by contacting us at the address provided.

2.13 Contacting EHS

If you need further advice on the NAP and Phosphorus Regulations during office hours please telephone: 028 9262 3184. In an emergency, please contact the EHS Water Pollution Hotline: 0800 80 70 60. See Annex T, page 97.

Key Definitions

Agricultural area means any land suitable for agricultural activities including any common land used for grazing and excludes areas under farm roads, paths, buildings, woods, dense scrub, rivers, streams, ponds, lakes, sandpits, quarries, areas of peat cutting, bare rock, areas of forestry and areas fenced off or inaccessible other than forests where the use of the same is ancillary to the farming of land for other agricultural purposes.

Chemical fertiliser means any fertiliser which is manufactured or blended by an industrial process.

Controller means in relation to a holding, the person charged with management of the holding for the calendar year in question and in the absence of written agreement to the contrary, the owner of the agricultural area will be taken to be charged with its management.

Crop requirement means the amount of nitrogen and/or phosphorus fertiliser which is reasonable to apply to land in any year for the purpose of promoting the growth of the crop having regard to the foreseeable nitrogen and phosphorus supply to the crop from the soil and from other sources, including any previous applications of livestock and other organic manure and any chemical fertilisers estimated as the fertiliser technical standards and as in Regulation 9 of the Nitrates Action Programme Regulations (Northern Ireland) 2006.

Dirty water means a low dry matter waste made up of water contaminated by manure, urine, effluent, milk and cleaning materials with a Biochemical Oxygen Demand (BOD) no greater than 2,000mg/litre and total nitrogen and dry matter content as set out in Schedule 1, table 2 of Nitrates Action Programme Regulations (Northern Ireland) 2006; (Schedule 1 table 2 dry matter content less than 1% and less than 0.3kg total N/m^3).

Farmyard manure means a mixture of bedding material and animal excreta in solid form arising from the housing of cattle, sheep and other livestock, excluding poultry manure, but including spent mushroom compost and the stackable solids fraction from mechanical separation of slurry excluding pig slurry.

Fertiliser technical standards means the 'DEFRA Fertiliser Recommendations for Agricultural and Horticultural Crops (RB209) 2000 7th Edition' (as may from time to time be re-issued) and any supplementary guidance and any other DEFRA publication substituting the standards set out in RB209 and any supplementary guidance.

Grassland means any land on which the vegetation consists predominantly of grass species.

Holding in relation to a controller, means all the agricultural area managed by that controller.

Lake means a body of standing inland surface water.

Land application means the addition of materials to agricultural land whether by spreading on the surface of the land, injection into the land, placing below the surface of the land or mixing with the surface layers of the land but does not include the direct deposition of manure onto land by animals.

Livestock means any animal kept for use or profit.

Livestock manure means waste products excreted by livestock or a mixture of litter and waste products excreted by livestock, even in processed form.

Nitrogen/phosphorus fertiliser means any substance, including chemical fertiliser, containing a nitrogen or a phosphorus compound or nitrogen and phosphorus compounds utilised on land to enhance growth of vegetation.

Organic manure means (a) livestock manure, and (b) nitrogen and/or phosphorus fertiliser, not being livestock manure or chemical fertiliser, derived from organic matter, and includes sewage sludge, residues from fish farms and other organic wastes.

Pig enterprise means any enterprise with more than 10 breeding sow places or 150 finishing pig places.

Poultry enterprise means any enterprise with more than 500 places.

Poultry litter means a mixture of bedding material and poultry excreta in solid form arising from the housing of poultry and with a dry matter content not less than 55%.

Scientific case means a reasoned case designed to demonstrate that the proposed deviation from the values set out in Schedule 1, tables 1, 2 and 3 of the Nitrates Action Programme Regulations (Northern Ireland) 2006 has no worse effect on the environment than that caused by using the afore mentioned values.

Slurry means (a) excreta produced by livestock whilst in a yard or building or (b) a mixture of such excreta with bedding, rainwater, seepage, washings or any other extraneous material from a building or yard used by livestock or in which livestock manure is stored or (c) any other organic manure or any combination of these, of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process and includes dirty water that is stored with slurry or mixed with slurry.

Soil fertility status means the soil reserves available for uptake by the next crop, estimated as described in the fertiliser technical standards.

Soil test means the chemical analysis of phosphorous in a soil sample taken and analysed in accordance with Schedule 1 of the Phosphorous (Use in Agriculture) Regulations (Northern Ireland) 2006 and from any supplementary guidance.

Steeply sloping land means land which has an average incline of 20% or more.

Underground strata has the same meaning as in Article 2(2) of the Water (Northern Ireland) Order, 1999. That is strata subjacent to the surface of any land, and any reference to water contained in any underground strata is a reference to water so contained otherwise than in a public sewer, pipe, reservoir, tank or underground works contained in any such strata.

Waterway has the same meaning as in Article 2(2) of the Water (Northern Ireland) Order, 1999. It includes any river, stream, water course, inland water (whether natural or artificial) or tidal waters and any channel or passage of whatever kind (whether natural or artificial) through which water flows. It also includes a channel or bed of a waterway which is for the time being dry.

Glossary of Terms

Ac	Acre
CAFRE	College of Agriculture, Food and Rural Enterprise
EHS	Environment and Heritage Service
Gal	Gallons
Ha	Hectare
IACS	Integrated Administrative Control System
m	Metre
m^3	Metre cubed
N	Nitrogen
NAP	Nitrates Action Programme
NI	Northern Ireland
P	Phosphorus
SFP	Single Farm Payment
SNS	Soil Nitrogen Supply
SSAFO	Slurry Silage and Fuel Oil Regulations
t	Tonne

Annex A - Dirty Water

Yards that produce slurry as run-off are typically areas that are frequently used, for example, livestock roaming areas and collecting yards.

Run-off from a frequently used collecting yard is slurry.

Run-off from a frequently used roaming yard is slurry.

In unroofed silos the amount of silage, silage effluent and the silo cleanliness will dictate what type of run-off is produced.

Run-off from an empty and cleaned silo would be clean water.

Run-off from a well managed silo with minimal silage droppings and no effluent present, could produce dirty water. Where effluent is present slurry is produced.

Areas used infrequently by machinery or by livestock may produce dirty water. Where the level of contamination is severe, the run-off produced would be slurry until the area is cleaned for example, handling facilities and walkways. Depending on the level of cleaning, either dirty water or clean water may be produced.

The run-off from the **unbrushed** area would produce slurry. The **brushed** area would produce dirty water. Clean water could be produced from these areas depending on the level of cleaning.

Run-off is slurry

Contaminated yard that could produce dirty water.

Run-off from a midden is slurry.

Yard producing clean water.

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet A - Livestock manure N produced by dairy cattle. (Only complete this table if you keep these livestock).

1. Enter the number of dairy cattle on the farm on the first day of each alternate month.
2. Total each month and then divide by 6 or 3 as shown to determine the average per year. (Calves are divided by 3 as these livestock categories are only for a half year period).[1]
3. Multiply the average number by the N produced per head per year.
4. Total the N produced per year and insert in Box A. **Transfer your answer to Box A on page 57.**

Livestock Type	1 Feb	1 Apr	1 Jun	1 Aug	1 Oct	1 Dec	Total per year		Average per year =Total÷6		N produced/ head/year (kg N)		N produced (kg N/year)
Dairy cattle								÷ 6	**No.**	X	**N**	=	**Answer**
Dairy cows								÷ 6		X	91	=	
Dairy heifer (over 2 years)								÷ 6		X	54	=	
Dairy heifer (1-2 years)								÷ 6		X	47	=	
Breeding bull								÷ 6		X	54	=	
Dairy cattle[1] (0-1 year)								÷ 6		X	19	=	
Heifer calves[1] (6-12 months)								÷ 3		X	12	=	
Heifer calves[1] (0-6 months)								÷ 3		X	7	=	
Total livestock manure nitrogen produced by dairy cattle (kg N/year)												**=**	**A**

[1] If keeping calves for part year use either 0-6 or 6-12 month categories.

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet B - Livestock manure N produced by beef cattle and sheep. (Only complete this table if you keep these livestock).

1. Enter the number of beef cattle and/or sheep on the farm on the first day of each alternate month.
2. Total each month and then divide by 6 or 3 as shown to determine the average number per year. (Calves and lambs are divided by 3 as these livestock categories are only for a half year period).[1]
3. Multiply the average number per year by the N produced per head per year.
4. Total the N produced per year and insert in Box B. **Transfer your answer to Box B on page 57.**

Livestock Type	1 Feb	1 Apr	1 Jun	1 Aug	1 Oct	1 Dec	Total per year		Average per year =Total÷6		N produced/ head/year (kg N)		N produced (kg N/year)
Beef cattle								÷ 6	**No.**	X	**N**	=	**Answer**
Suckler Cows	50	50	50	50	50	50	300	÷ 6	50	X	54	=	2700
Cattle (over 2 years)								÷ 6		X	54	=	
Cattle (1-2 years)								÷ 6		X	47	=	
Breeding Bull								÷ 6		X	54	=	
Bull beef[1] (0-13 months)								÷ 6		X	30	=	
Beef cattle[1] (0-1 year)								÷ 6		X	19	=	
Bull beef[1] (6-13 months)								÷ 3		X	23	=	
Calves[1] (6-12 months)	0	48	48	48	0	0	144	÷ 3	48	X	12	=	576
Calves[1] (0-6 months)	48	0	0	0	48	48	144	÷ 3	48	X	7	=	336

Livestock type	1 Feb	1 Apr	1 Jun	1 Aug	1 Oct	1 Dec	Total per year		Average per year =Total÷6		N produced/ head/year (kg N)		N produced (kg N/year)
Sheep								÷ 6	**No.**	X	**N**	=	**Answer**
Ewe (over 1 year)	145	156	155	139	155	150	900	÷ 6	150	X	9	=	1350
Ram (over 1 year)								÷ 6		X	9	=	
Lamb[1] (0-1 year)								÷ 6		X	4.4	=	
Lamb[1] (6-12 months)								÷ 6		X	3.2	=	
Lamb[1] (0-6 months)	0	196	265	198	153	34	846	÷ 6	141	X	1.2	=	169
Total livestock manure nitrogen produced by cattle and sheep (kg N/year)												**=**	**5131 B**

[1] If keeping calves/lambs for part year use either 0-6 or 6-12 month categories.

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet C: Livestock manure N produced by pigs per year. (Only complete this table if you keep these livestock).

1. Select from either breeding and rearing or growing and finishing, depending on the system on your farm.
2. Enter the number of pigs on the farm on the first day of each alternate month.
3. Total each month and then divide by 6 to determine the average number per year.
4. Calculate the total number of pigs sold per year and select the N figure for your rearing system.
5. Multiply the average number per year by the N produced per head per year.
6. Total the N produced per year and insert in Box C. **Transfer your answer to Box C on page 57.**

Livestock Type	Breeding and Rearing Farms Only												
	1 Feb	1 Apr	1 Jun	1 Aug	1 Oct	1 Dec	Total per year		Average per year =Total÷6		N produced/ head/year (kg N)		N produced (kg N/year)
Pigs									**No.**	X	**N**	=	**Answer**
Boars [2]								÷ 6			16	=	
Maiden gilts [2]								÷ 6		X	13	=	
Breeding sows [2] (including piglets to weaning)								÷ 6		X	19.5	=	
Pigs sold per year	**Calculate the total number of pigs sold per year or enter the actual number sold.**												
	Average no. sows			X	**Average no. pigs sold per sow per year**			=	**Total no. pigs sold per year**	X	**N produced/head (kg N)** *Select		**N produced (kg N/year)**
								=		X		=	

[2] Average number on the unit at any one time and not the total number entering the herd.

*** Select the Nitrogen figure depending on the weaning age and approximate sale weight of pigs on your unit.**

	Approximate Sale weight	N Produced/head (kg N)
Weaned at 3-4 weeks	18kg (7 1/2 weeks)	0.26
	35kg (11 weeks)	0.71
	105kg (23 weeks)	3.40
Weaned at 7 weeks	35kg (11 weeks)	0.46
	105kg (23 weeks)	3.15

Example:
Select 3.40 (kg N) if the weaning age is four weeks and approximate sale weight is 105kg.

Growing and Finishing Farms only – select the weight range for your finishing system

Livestock type	Growing and Finishing Farms Only												
	1 Feb	1 Apr	1 Jun	1 Aug	1 Oct	1 Dec	Total per year		Average per year =Total÷6		N produced/ head/year (kg N)		N produced (kg N/year)
Pigs									**No.**		**N**	=	**Answer**
18kg - 35kg								÷ 6		X	0.46	=	
18kg - 105kg								÷ 6		X	3.15	=	
35kg - 105kg								÷ 6		X	2.69	=	
Total livestock manure nitrogen produced by pigs (kg N/year)												=	**C**

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet D: Livestock manure N produced by poultry per year. (Only complete if you keep poultry).

1. Depending on the poultry type, enter either the number on your farm throughout the calendar year or the capacity of the unit.
2. Multiply the number of birds by the N produced per 1000 birds.
3. Total the N produced by poultry per year and insert in Box D. **Transfer your answer to Box D on page 57.**

Livestock type	No. of birds produced per year		N produced/1000 birds (kg N)		N produced (kg N/year)
Poultry	**No.**	**X**	**N**	**=**	**Answer**
Broilers (1000's)[3]		X	38.6	=	
Male turkeys (1000's)[4]		X	611	=	
Female turkeys (1000's)[5]		X	363	=	
Fattening ducks (1000's)[6]		X	139	=	

Livestock Type	Unit capacity (No. of birds)		No. weeks occupancy per		N produced/1000 birds per week		N produced (kg N/year)
Poultry	**No.**	**X**	**No.**	**X**	**N**	**=**	**Answer**
Broiler breeders[7] (1000s) 0-18 wks		X		X	5.9	=	
Broiler breeders[8] (1000s) 18-60 wks		X		X	20.8	=	
Broiler breeders[9] (1000s) 0-60 wks		X		X	18.6	=	
Pullets (1000s)[10]		X		X	5.7	=	
Layers (1000s)[11]		X		X	11.7	=	
Total livestock manure nitrogen produced by poultry (kg N/year)						**=**	**D**

[3] Broilers (1000), data based on 255kg N/year, output per 6.6 crops/year, 40 day cycle (73% occupancy).

[4] Male turkeys (1000), data based on 1284kg N/year, output per 2.1 crops/year, 140 day cycle (80% occupancy).

[5] Female turkeys (1000), data based on 871kg N/year, output per 2.4 crops/year, 120 day cycle (80% occupancy).

[6] Fattening ducks (1000), data based on 834kg N/year, output per 6 crops, 50 day cycle (85% occupancy).

[7] Broiler breeders (1000), 0 – 18 weeks data based on 142kg N/year, output per 18 week cycle (46% occupancy).

[8] Broiler breeders (1000), 18 – 60 weeks data based on 945kg N/year, output per 42 week cycle (87.5% occupancy).

[9] Broiler breeders (1000), 0 – 60 weeks data based on 878kg N/year, output per 60 week cycle (91% occupancy).

[10] Pullets (1000), data based on 113kg N/year, output per 17 week cycle (38% occupancy).

[11] Layers (1000), data based on 607kg N/year, (98% occupancy).

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet E – Livestock manure N produced by Deer and Goats per year. (Only complete if you keep these livestock).

1. Enter the number of deer and/or goats on the farm on the first day of each alternate month.
2. Total each month and then divide by 6 to determine the average number per year.
3. Multiply the average number per year by the N produced per head per year.
4. Total the N produced per year and insert in Box E. **Transfer your answer to Box E in on page 57.**

Livestock type	1 Feb	1 Apr	1 Jun	1 Aug	1 Oct	1 Dec	Total per year		Average per year =Total÷6		N produced/ head/year (kg N)		N produced (kg N/year)
Deer								÷ 6	**No.**	X	**N**	=	**Answer**
Deer (red) 6 months - 2 years								÷ 6		X	13	=	
Deer (red) over 2 years								÷ 6		X	25	=	
Deer (fallow) 6 months - 2 years								÷ 6		X	7	=	
Deer (fallow) over 2 years								÷ 6		X	13	=	
Deer (sika) 6 months - 2 years								÷ 6		X	6	=	
Deer (sika) over 2 years								÷ 6		X	10	=	
Goats								÷ 6	**No.**	X	**N**	=	**Answer**
Goats								÷ 6		X	9	=	
Other livestock								÷ 6		X		=	
Total livestock manure nitrogen produced by Deers and Goats (kg N/year)												**=**	**E**

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet F - Livestock manure N from slurry and manure imported onto the farm.

1. Only complete this part if slurry or manure is imported onto your farm.
2. Select the type of slurry/manure and dry matter (DM) and insert the volume imported. Typical DM is 6% for cattle slurry and 4% for pig slurry.
3. Multiply the N produced per m^3/tonne by the volume/quantity imported.
4. Total the N imported per year and insert in Box F. **Transfer your answer to Box F on page 57.**

Slurry Type	**Volume (m^3)**		**Nitrogen content (kg N/m^3)**		**N Imported (kg N/year)**
	V	**X**	**N**	**=**	**Answer**
Beef cattle slurry – 2% DM		X	1	=	
Beef cattle slurry – 6% DM		X	2.3	=	
Beef cattle slurry – 10% DM		X	3.5	=	
Dairy cattle slurry – 2% DM		X	1.5	=	
Dairy cattle slurry – 6% DM		X	3	=	
Dairy cattle slurry – 10% DM		X	4	=	
Pig slurry – 2% DM		X	3	=	
Pig slurry – 4% DM	100	X	4	=	400
Pig slurry – 6% DM		X	5	=	
Separated slurry		X	3	=	
Other		X		=	

Manure Type	**Quantity (tonnes)**		**Nitrogen content (kg N/tonne)**		**N Imported (kg N/year)**
	t	**X**	**N**	**=**	**Answer**
Broiler/turkey manure – 60% DM		X	30	=	
Cattle/sheep FYM – 25% DM		X	6	=	
Duck manure – 25% DM		X	6.5	=	
Layer manure – 30% DM		X	16	=	
Pig FYM – 25% DM		X	7	=	
Other		X		=	
		X		=	
Total livestock manure nitrogen from imported slurry and manure (kg N/year)				**=**	**400 F**

(1m^3= 220 gallons)

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Worksheet G - Livestock manure N from slurry and manure exported from the farm.

1. Only complete this part if slurry or manure is exported from your farm.
2. Select the type of slurry/manure and dry matter (DM) and insert the volume/quantity exported. Typical DM is 6% for cattle slurry and 4% for pig slurry.
3. Multiply the N produced per m^3/tonne by the volume/quantity exported.
4. Total the N exported per year and insert in Box G. **Transfer your answer to Box G on page 57.**

Slurry Type	**Volume (m^3)**		**Nitrogen content (kg N/m^3)**		**N Exported (kg N/year)**
	V	**X**	**N**	**=**	**Answer**
Beef cattle slurry – 2% DM		X	1	=	
Beef cattle slurry – 6% DM		X	2.3	=	
Beef cattle slurry – 10% DM		X	3.5	=	
Dairy cattle slurry – 2% DM		X	1.5	=	
Dairy cattle slurry – 6% DM		X	3	=	
Dairy cattle slurry – 10% DM		X	4	=	
Pig slurry – 2% DM		X	3	=	
Pig slurry – 4% DM		X	4	=	
Pig slurry – 6% DM		X	5	=	
Separated slurry		X	3	=	
Other		X		=	

Manure Type	**Quantity (tonnes)**		**Nitrogen content (kg N/tonne)**		**N Exported (kg N/year)**
	t	**X**	**N**	**=**	**Answer**
Broiler/turkey manure – 60% DM		X	30	=	
Cattle/sheep FYM – 25% DM		X	6	=	
Duck manure – 25% DM		X	6.5	=	
Layer manure – 30% DM		X	16	=	
Pig FYM – 25% DM		X	7	=	
Other		X		=	
		X		=	
Total livestock manure nitrogen from exported slurry and manure (kg N/year)				**=**	**G**

(1m^3= 220 gallons)

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Step 1: Nitrogen from livestock manure

Transfer the answers from the relevant worksheets and enter the amount of livestock manure N from each of the enterprises on your farm. Adjust for any slurry imported or exported and total to give the Total livestock manure N produced on the farm.

Dairy cattle livestock manure N (kg/year)	A		←	Transfer answer from Worksheet A on page 47.
	+	+		
Beef cattle and sheep livestock manure N (kg/year)	B	5131	←	Transfer answer from Worksheet B on page 49.
	+	+		
Pig livestock manure N (kg/year)	C		←	Transfer answer from Worksheet C on page 51.
	+	+		
Poultry livestock manure N (kg/year)	D		←	Transfer answer from Worksheet D on page 52.
	+	+		
Deer and goat livestock manure N (kg/year)	E		←	Transfer answer from Worksheet E on page 54.
	+	+		
Imported slurry/manure N (kg/year)	F	400	←	Transfer answer from Worksheet F on page 55.
	-	-		
Exported slurry/manure N (kg/year)	G		←	Transfer answer from Worksheet G on page 56.
	=	=		
Total livestock manure N (kg/year) (A + B + C + D + E + F - G)	H	5531		

ANNEX B - Example Worksheet: Calculating Livestock Manure Nitrogen Loading

Step 2: Land area

Calculate the total area (ha) which you control.

Land owned[12] (ha)	I	46
	+	+
Land taken[12] (ha)	J	
	-	-
Land let out[12] (ha)	K	
	=	=
Total area (ha) (I + J – K)	L	**46**

Note:

[12] Exclude non-agricultural areas, including farm roads, paths, buildings, woodland, rivers, ponds and quarries.

Step 3: Livestock manure nitrogen loading

Calculate the annual livestock manure nitrogen loading for your farm by dividing the total livestock manure nitrogen by the total area controlled.

Total livestock manure N (kg)	H	5531	←	Transfer answer from Step 1 on page 57.
	÷	÷		
Total area (ha)	L	46	←	Transfer answer from Step 2 above.
	=	=		
Livestock manure nitrogen loading (kg/ha/year) (H ÷ L)	M	120	←	Is your figure below 170kg N/ha/year.

If your livestock manure nitrogen loading is above the 170kg N/ha/year limit, taking additional land, exporting livestock manure or reducing stock will help reduce the N/ha/year.

ANNEX C - Approximate Land Requirements to Meet 170kg N/ha/year Livestock Manure Limit for Various Livestock Types

Livestock type	Land requirement to meet 170kg N/ha limit	
	Hectares	Acres
1 Dairy cow place (assuming a 30% replacement rate*)	0.65	1.61
1 Suckler cow place and calf place up to 1 year (assuming a 20% replacement rate*)	0.48	1.19
1 Cattle place 1 – 2 years	0.28	0.69
1 Cattle place over 2 years	0.32	0.79
1 Breeding ewe and lamb place up to 6 months (assuming a 20% replacement rate)*	0.06	0.15
1 Breeding sow place including 2 litters, gilts and boars (assuming a 40% replacement rate and 20 bacon reared pigs sold annually)**	0.5	1.24
1000 Laying hens	3.57	8.82
1000 Broilers (actual number not places)	0.23	0.57
1000 Broiler breeders (0-60 weeks)	5.56	13.73

* Land requirement will vary according to replacement rate
** Land requirement will vary according to replacement rate and performance

Examples: Land to meet 170kg limit

A 50 cow suckler herd with replacements up to one year requires 50 x 0.48ha = 24ha

100 dairy cow herd typically requires 100 x 0.65ha = 65ha

10,000 laying hen enterprise requires 10 x 3.57ha = 35.7ha

A 20,000 broiler house finishing 132,000 birds/year requires 132 x 0.23ha = 30.36ha

ANNEX D – Calculating How Much Livestock Manure to Import or Export to Meet the 170kg N/ha/year Limit

Calculating how much livestock manure can be imported before the 170kg N/ha/year is met.

Example

Total livestock manure nitrogen produced on farm	= 5131kg
Total land controlled	= 46ha
Total farm livestock manure nitrogen permitted to meet 170kg N/ha/year limit = 46 x 170	= 7820kg
Amount of livestock manure nitrogen that can be imported is 7820kg – 5131kg	= 2689kg
Amount of dairy cow slurry (containing 3kg N/m^3) (see Annex E, page 61) that can be imported is 2689kg ÷ 3kg	= 896m^3 or (197,000 gallons)
Amount of pig slurry (containing 4kgN/m^3) (see Annex E, page 61) that can be imported is 2689kg ÷ 4kg	= 672m^3 or (147840 gallons)
Amount of broiler litter (containing 30kgN/m^3) (see Annex E, page 61) that can be imported is 2689kg ÷ 30kg	= 89.6t

Calculating how much livestock manure needs to be exported to meet the 170kg N/ha/year?

Example

Total livestock manure nitrogen produced on farm	= 5131kg
Total land controlled	= 20ha
Total farm livestock manure nitrogen permitted to meet 170kg N/ha/year limit = 20 x 170	= 3400kg
Amount of livestock manure nitrogen that needs to be exported is 5131kg – 3400kg	= 1731kg
Amount of cattle slurry containing (2.3kg N/m^3) (see Annex E, page 61) that must be exported is 1731kg ÷ 2.3kg	= 753m^3 or (165,660 gallons)

ANNEX E – Nutrient Value of Livestock Manures

Total Nitrogen content on a fresh weight basis

			N available			P available
Livestock type	**DM content (%)**	**Total nitrogen (kg/m³)**	**From 1 Jan 2007**	**From 1 Jan 2009**	**From 1 Jan 2010**	**kg P_2O_5/m³**
Dairy	2	1.5	0.45	0.53	0.6	0.6
	6	**3.0**	**0.9**	**1.05**	**1.2**	**1.2**
	10	4.0	1.2	1.4	1.6	2.0
Beef Cattle	2	1.0	0.3	0.35	0.4	0.6
	6	**2.3**	**0.69**	**0.81**	**0.92**	**1.2**
	10	3.5	1.05	1.23	1.4	2.0
Pigs	2	3.0	1.05	1.35	1.5	1.0
	4	**4.0**	**1.4**	**1.8**	**2.0**	**2.0**
	6	5.0	1.75	2.25	2.5	3.0
Separated cattle slurries (liquid portion)						
Strainer box	1.5	1.5	0.45	0.53	0.6	0.3
Weeping wall	3	2	0.6	0.7	0.8	0.5
Mechanical separator	4	3	0.9	1.05	1.2	1.2
Dirty water	<1	0.3	0.09	0.11	0.12	Trace
Solid manures		**(kg/t)**				**(kgP_2O_5/t)**
Broiler	60	30	6	7.2	9	25
Layers	30	16	3.2	3.84	4.8	13
Turkeys	60	30	6	7.2	9	25
Ducks	25	6.5	1.3	1.56	1.95	5.5
Cattle FYM	25	6.0	1.2	1.5	1.8	3.5
Sheep FYM	25	6.0	1.2	1.5	1.8	2.0
Pig FYM	25	7.0	1.4	1.75	2.1	7.0
Other organic manures	As per analysis	As per analysis	30% of total	35% of total	40% of total	100% of P total as per analysis

Figures in bold – most common values

ANNEX F - Example Worksheet: Calculating the Amount of Nitrogen Applied to Grassland

Column (A)	Enter the total area of grassland.
Column (B)	Enter the maximum nitrogen requirement for your grassland area. Choose either 'Dairy Farm' or 'Other Livestock Farm' nitrogen limit (see 1.5.6).
Column (C)	Enter the type(s) of organic manure applied. **Do not include livestock manure.** (see 1.5.6).
Column (D)	Enter the amount of this organic manure applied to the grassland area.
Column (E)	Enter the available nitrogen content of these organic manures (the total N content can be derived from the import licence) by calculating the % availability that is 30%, 35%, 40% according to the year applied. For example, sewage sludge with a total nitrogen of 3kg of N per m^3 has 0.9kg N available nitrogen per m^3.
Column (F)	Multiply columns D and E to give total available nitrogen applied in organic manures.
Column (G)	Enter the type(s) of fertiliser sown on grassland during the year.
Column (H)	Enter the total amount of fertiliser product applied for each fertiliser type(s).
Column (I)	Calculate the amount of N applied for all type(s) of fertiliser applied. For example, if 25000kgs of 27:0:0 is applied, Kg of N applied = 27 x 25000 ÷ 100 = 6750kg of nitrogen.
Column (J)	Add column (F) and (I) to give total nitrogen applied.
Column (K)	Divide total in (J) by whole area of grassland (A). Application to be less than requirement in column (B)

ANNEX F - Example Worksheet: Calculating the Amount of Nitrogen Applied to Grassland

Nitrogen record sheet for grassland										
Grassland details		Organic manure excluding livestock manures (for example, sewage sludge)				Chemical N fertiliser			Organic and chemical N fertiliser	
Area of grassland on the farm (ha)	N requirement of grassland (kg/ha) (As per 1.5.6)	Type of manure	Total amount of manure applied to whole area of grassland (m^3 or t)	Amount of available N per m^3 or t Annex E	Total amount of N available to whole area of grassland (kg) (D) x (E)	Type of N fertiliser applied	Total amount of fertiliser product applied to whole area (kg)	Total amount of N applied to whole area (kg)	Total amount of N applied over whole area (kg) (F) + (I)	Total N applied per ha (kg) (J) ÷ (A)
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
40	239	None	None	None	None	27:0:0	25,000	6,750	6,750	169
						26:5:5	1600	416	416	10
						46:0:0	2000	920	920	23
								Total	8,086	202

ANNEX G - Grassland Chemical Nitrogen Fertiliser Ready Reckoners

1 - Dairy farms (more than 50% of the total nitrogen in livestock manures comes predominantly from dairy cows and dairy heifer replacements)

No organic manure other then livestock manure is applied

Assume a 27% N type fertiliser only

	Year		
	2007	**2009**	**2010**
	Maximum N application rate		
	289kg N/ha	**281kg N/ha**	**272kg N/ha**
Farm Area			
1ha 2.5ac	1.07t	1.04t	1.00 tonnes
2ha 5ac	2.14t	2.08t	2.02 tonnes
4ha 10ac	4.28t	4.16t	4.02 tonnes
8ha 20ac	8.56t	8.32t	8.06 tonnes
20ha 50ac	21.40t	20.80t	20.14 tonnes
40ha 100ac	42.80t	41.63t	40.28 tonnes

2 - Other Livestock Farms (less than 50% of the total nitrogen in livestock manures comes predominantly from dairy cows and dairy heifer replacements)

No organic manure other than livestock manure is applied

Assume a 27% N type fertiliser only

	Year		
	2007	**2009**	**2010**
	Maximum N application rate		
	239kg N/ha	**231kg N/ha**	**222kg N/ha**
Farm Area			
1ha 2.5ac	0.89t	0.86t	0.82t
2ha 5ac	1.77t	1.71t	1.64t
4ha 10ac	3.54t	3.42t	3.29t
8ha 20ac	7.08t	6.84t	6.58t
20ha 50ac	17.70t	17.11t	16.44t
40ha 100ac	35.41t	34.22t	32.88t

ANNEX H - Soil Nitrogen Supply for Crops

(i) Crops following crops

Soil Nitrogen Supply (SNS) Indices for High Rainfall Areas (over 700mm annual rainfall, or over 250mm excess winter rainfall) – based on the last crop grown.

SNS Index	0	1	2	3	4	5	6
SNS (kg/ha N). SNS=SMN (0-90cm soil depth) + crop N + estimate of mineralisable N							
	<60	**61-80**	**81-100**	**101-120**	**121-160**	**161-240**	**Over 240**
Light sands or shallow soils over sandstone	Cereals, peas, beans, oilseed rape, potatoes, low/med/high N veg, forage cuts (cut), rotational Set-aside	Sugar beet	*	*	*	*	*
Medium soils or shallow soils (not over sandstone)		Cereals,sugar beet, peas, beans, oilseed rape, potatoes, low/med N veg, forage crops (cut)	High N veg, rotational Set-aside	*	*	*	*
Deep clay soils		Cereals, sugar beet, low/med N veg, forage crops (cut)	Peas,beans, oilseed rape, potatoes, high N veg, rotational Set-aside	*	*	*	*
Deep fertile silty soils		Cereals, sugar beet, low N veg, forage crops (cut)	Med N veg	Peas, beans, oilseed rape, potatoes, high N veg, rotational Set-aside	*	*	*
Organic soils				All crops			
Peat soils						All crops	

Shaded boxes indicate levels of SNS which rarely occur.

* These indices can occur in practice where there has been a history of grassland or frequent applications of organic manures. Reference should be made to RB209.

(Extract from fertiliser technical standards, RB209)

ANNEX H - Soil Nitrogen Supply (SNS) for Crops

(ii) Crops following out grass leys

	Year 1	Year 2	Year 3
Light sands or shallow soils over sandstone			
All leys with 2 or more cuts annually receiving little or no manure	0	0	0
1-2 year leys, low N			
1-2 year leys, 1 or more cuts			
3-5 year leys, low N, 1 or more cuts			
1-2 year leys, high N, grazed	1	2	1
3-5 year leys, low N, grazed			
3-5 year leys, high N, 1 cut then grazed			
3-5 year leys, high N, grazed	3	2	1
Medium soils or shallow soils (not over sandstone)			
All leys with 2 or more cuts annually receiving little or no manure	1	1	1
1-2 year leys, low N			
1-2 year leys, 1 or more cuts			
3-5 year leys, low N, 1 or more cuts			
1-2 year leys, high N, grazed	2	2	1
3-5 year leys, low N, grazed			
3-5 year leys, high N, 1 cut then grazed			
3-5 year leys, high N, grazed	3	3	2
Deep clay soils and deep fertile silty soils			
All leys with 2 or more cuts annually receiving little or no manure	1	1	1
1-2 year leys, low N			
1-2 year leys, 1 or more cuts			
3-5 year leys, low N, 1 or more cuts			
1-2 year leys, high N, grazed	3	2	1
3-5 year leys, low N, grazed			
3-5 year leys, high N, 1 cut then grazed			
3-5 year leys, high N, grazed	4	3	2

High N means more than 250kg/ha/year fertiliser and available manure nitrogen used on average in the last 2 years or high in clover content.
The above table is for ley-arable systems. Ploughing out of permanent pastures, or long leys with short arable breaks, is likely to result in the release of large amounts of N that will be available for crop uptake over many years. Increase the index for 3-5 year leys, high N grazed by one level.
(Extract from fertiliser technical standards, RB209)

ANNEX I - Fertiliser Standards for Nitrogen Applications (kg/ha)

(i) Potatoes (kg/ha)

Length of growing season and variety group		SNS Index		
		0 and 1	**2, 3 and 4**	**5 and 6**
<60 days	Variety group 1	120-150	80-120	40-60
	Variety group 2	100-130	60-90	0-40
	Variety group 3	80-110	40-70	0-40
60-90 days	Variety group 1	180-220	140-170	100-120
	Variety group 2	140-190	100-130	60-80
	Variety group 3	120-160	80-110	40-60
	Variety group 4	60-90	20-40	0-40
90-120 days	Variety group 1	240-270	200-220	160-180
	Variety group 2	160-220	120-160	80-120
	Variety group 3	120-180	80-100	40-60
	Variety group 4	80-140	40-60	0-40
>120 days	Variety group 2	200-250	160-180	120-150
	Variety group 3	160-210	120-140	80-100
	Variety group 4	100-180	60-80	20-40

Group 1	Short haulm longevity (determinate varieties)	Home Guard, Premiere, Accord
Group 2	Medium haulm longevity (partially determinate varieties	British Queen, Maris Peer, Lady Rosetta, Lady Claire, Saxon,
Group 3	Long haulm longevity (indeterminate varieties)	Cultra, Desiree, Kerrs' Pink, Maris Piper, Navan, Sante, Dunbar Std
Group 4	Very long longevity	Cara, Arran Victory

(Extract from fertiliser technical standards, RB209)

ANNEX I – Fertiliser Standards for Nitrogen Applications

(ii) Crops (kg/ha)

		SNS Index						
		0	1	2	3	4	5	6
Winter Wheat	Light sandy soils	160	130	100	70	40	0-40	0
	Shallow soils over chalk		240	200	160	110	40-80	0-40
	Medium and deep clay soils, shallow over rock not chalk		220	180	150	100	40-80	0-40
	Deep fertile silty soils		180	150	120	80	40-80	0-40
	Organic soils				120	80	40-80	0-40
	Peaty soils						0-60	0-60
Winter Barley (feed)	Light sandy soils	160	130	100	70	40	0-40	0
	Shallow soils over chalk		200	160	130	70	20-60	0-40
	Medium and deep clay soils, Shallow over rock not chalk		180	150	120	70	20-60	0-40
	Deep fertile silty soils		150	120	80	40	0-40	0
	Organic soils				120	70	20-60	0-40
	Peaty soils						0-40	0-40
Winter Malting Barley (1.6% grain N)	Light sandy soils	120	80	40	0-40	0	0	0
	Other mineral soils		130	100	70	0-40	0	0
	Organic soils				70	0-40	0	0
	Peaty soils						0	0
Winter Oats, Rye, Triticale	Light sandy soils	120	80	50	0-40	0	0	0
	Other mineral soils		130	100	70	40	0-40	0
	Organic soils				70	40	0-40	0
	Peaty soils						0-40	0-40
Winter Oilseed Rape	Seedbed	30	30	30	0	0	0	0
	All mineral soils	220	190	160	120	80	40-80	0-40
	Organic soils				120	80	40-80	40-80
	Peaty soils						40-80	40-80

ANNEX I – Fertiliser Standards for Nitrogen Applications

(ii) Crops (kg/ha)

		SNS Index						
		0	1	2	3	4	5	6
Spring Wheat	Light sand soils	160	130	100	70	40	0-40	0
	All other mineral soils		180	150	120	70	40	0-40
	Organic soils				120	70	40	0-40
	Peaty soils						0-40	0-40
Spring Barley (feed)	Light sand soils	125	90	60	40	0-40	0	0
	Other mineral soils		150	120	80	40	0-40	0
	Organic soils				80	40	0-40	0
	Peaty soils						0-40	0-40
Spring Barley (malting), Oats, Rye, Triticale	Light sand soils	100	70	40	0-40	0	0	0
	Other mineral soils		120	80	50	0-40	0	0
	Organic soils				50	0-40	0	0
	Peaty soils						0	0
Spring Oilseed Rape	Light sand soils	120	80	50	0-40	0	0	0
	Other mineral soils		120	80	50	0-40	0	0
	Organic soils				50	0-40	0	0
	Peaty soils						0-40	0-40
Spring Linseed	Light sand soils	80	50	0-40	0	0	0	0
	Other mineral soils		80	50	0-40	0	0	0
	Organic soils				0-40	0	0	0
	Peaty soils						0	0
Maize	All mineral soils	120	80	40	20	0	0	0
Peas		0	0	0	0	0	0	0
Forage Swedes and turnips		100	80	60	40	0-40	0	0
Forage rape and stubble turnips grazed		100	90	80	60	40	0-40	0
Fodder beet and mangels		130	120	110	90	60	0-40	0
Kale cut		130	120	110	90	60	0-40	0
Forage rye and forage triticale cut		80	60	40	20	0	0	0

ANNEX J - Example Worksheet: Calculating the Amount of Nitrogen Applied to Crops Other Than Grass

In contrast to grassland all organic manures must be taken into consideration including livestock manures.

Column (A)	Enter crop type from Annex I, page 67.
Column (B)	Enter the whole area for this crop on the farm.
Column (C)	Enter the maximum nitrogen requirement for your crop (Annex I, page 67) taking into consideration Soil Nitrogen Supply (Annex H, page 65)
Column (D)	Enter the type(s) of organic manure applied, including livestock manure (see 1.5.6).
Column (E)	Enter in the amount of manure applied to the whole area of crop.
Column (F)	Enter the amount of nitrogen available in m^3 or t of the applied manure (Annex E, page 61).
Column (G)	Multiply columns E and F to give total available nitrogen applied in organic manures.
Column (H)	Enter the type(s) of fertiliser sown.
Column (I)	Enter the total amount of fertiliser product applied for each fertiliser type(s)
Column (J)	Total up the amount of nitrogen applied for all type(s) of fertiliser applied. For example, if 800kg of 24:6:12 was applied, Kg of N applied = 24 x 80 ÷ 100 = 192kg of nitrogen.
Column (K)	Add column (G) and (J) to give total nitrogen applied to the whole crop area. (If applying several types of chemical N fertiliser, ensure that the N in organic manures (column G), is only included once).
Column (L)	Divide total in (K) by whole area of crop (B). Application to be less than requirement in column (C).

ANNEX J - Example Worksheet: Calculating the Amount of Nitrogen Applied to Crops Other Than Grass

Nitrogen Record Sheet for crop - for example, Spring Barley											
Crop details			Organic manure including livestock manure				Chemical N fertiliser			Organic and Chemical N Fertiliser	
Crop	Total area of crop (ha)	Crop N requirement kg/ha Annex I	Type	Total amount of manure applied to whole area of crop (m^3 or t)	Amount of available N per m^3 or t Annex E	Total amount of N available to whole area of crop (kg) (E) x (F)	Type of N fertiliser applied	Total amount of fertiliser product applied to whole area (kg)	Total amount of fertiliser N applied to whole area (kg)	Total amount of N applied over whole area (kg) (G) + (J)	Total N applied per ha (kg) (K) ÷ (B)
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
S Barley	3	80	Cattle slurry	60	0.69	41	24:6:12	800	192	233	78
									Total	233	78

ANNEX J - Example Worksheet: Calculating the Amount of Nitrogen Applied to Crops Other Than Grass

Nitrogen Record Sheet for crop - for example, Winter Wheat											
Crop details			Organic manure including livestock manure				Chemical N fertiliser			Organic and Chemical N Fertiliser	
Crop	Total area of crop (ha)	Crop N requirement kg/ha Annex I	Type	Total amount of manure applied to whole area of grass/crop (m^3 or t)	Amount of available N per m^3 or t Annex E	Total amount of N available to whole area of crop (kg) (E) x (F)	Type of N fertiliser applied	Total amount of fertiliser product applied to whole area (kg)	Total amount of fertiliser N applied to whole area (kg)	Total amount of N applied over whole area (kg) (G) + (J)	Total N applied per ha (kg) (K) ÷ (B)
(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
W Wheat	3	120	Cattle FYM	45	1.2	54	46:0:0	400	184	238	79
							27:0:0	250	67	67	22
									Total	305	101

ANNEX K - Fertiliser Standards for Application of Phosphorus (P_2O_5) (kg/ha)

(Extract from fertiliser technical standards, RB209)

Grass

	Soil Index				
	0	**1**	**2**	**3**	**4**
Grass establishment	120	80	50	30	0
Grazed grass (whole season)	60	40	20	0	0
First cut silage	90	65	40	20	0
Second cut silage	25	25	25	0	0
Third cut silage	15	15	15	0	0
Fourth cut silage	10	10	10	0	0
Hay	80	55	30	0	0

Crops

	Soil Index				
	0	**1**	**2**	**3**	**4**
Ploughed in/incorporated					
- Winter wheat, winter barley	110	85	60	20	0
- Spring wheat, spring barley, rye, triticale	95	70	45	0	0
- Winter and spring oats	95	70	45	0	0
Straw removed					
- Winter wheat, winter barley	120	95	70	20	0
- Spring wheat, spring barley, rye, triticale	105	80	55	0	0
- Winter and spring oats	105	80	55	0	0
Winter oilseed rape	100	75	50	0	0
Spring oilseed rape	80	55	30	0	0
Maize	110	85	60	20	0
Forage swedes and turnips	100	75	50	0	0
Forage rape and stubble turnips	75	50	25	0	0
Fodder beet and mangels	100	75	50	0	0
Kale	100	75	50	0	0
Forage rye and forage triticale, peas	85	60	35	0	0
Maincrop potatoes	270	230	180	130	50
Early seed potatoes	270	230	180	130	50

ANNEX L - Example Worksheet: Calculating the Phosphorus Application

(Only relevant if chemical P has been applied)

Complete the Phosphorus field record sheet on page 75 by performing the following steps

Column (A)	Identify the crop grown. A list of the main crops and their requirements are listed in Annex K, page 73.
Column (B)	Enter area of field.
Column (C)	Enter soil P index from soil analysis.
Column (D)	According to the soil index found on soil analysis results enter the phosphorus requirement in kg/ha from Annex K, page 73.
Column (E)	Enter the type(s) of livestock manure applied to these areas as per Annex E, page 61.
Column (F)	Enter in the amount of manure applied after soil sample taken in m^3 or t.
Column (G)	Enter the P (P_2O_5) content of the manure applied from Annex E, page 61.
Column (H)	Multiply columns (F) and (G) to give total P (P_2O_5) applied in organic manures.
Column (I)	Enter the type of fertiliser applied.
Column (J)	Enter the total amount of fertiliser applied.
Column (K)	Enter the amount of chemical phosphorus applied. For example, type of fertiliser applied was 26:5:5, this contains 5% P (P_2O_5). If 1600kg was applied per ha then the amount of P (P_2O_5) would be 5 x 1600 ÷ 100 = 80kg.
Column (L)	Add column (H) and (K) to give total phosphorus applied and divide by the area of the field (B) to get the application rate per ha. Column (L) to be less than column (D)

(1 hectare=2.47 acres)

ANNEX L - Example Worksheet: Calculating the Phosphorus Application

Phosphorus field record sheet												
Grass/Crop details					Organic manure (including livestock manures)				Chemical P fertiliser			
Field No.	Crop	Area of field (ha)	Soil index (from analysis)	P (P_2O_5) requirement kg/ha according to soil index Annex K	Type of organic manure applied after sample taken Annex E	Total amount of organic manure applied (m^3 or t)	P (P_2O_5) content of applied organic manure (kg/m^3 or kg/t) Annex E	Total amount of P (P_2O_5) supplied in organic manure (F) x (G)	Type of fertiliser product applied	Total amount of fertiliser product applied (kg)	Total amount of P (P_2O_5) applied	Total P (P_2O_5) applied per ha (kg) (H) + (K) divided by (B)
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)
3	Grazing	4	2	20	None	None	None	None	26:5:5	1600	80	20
6	S. Barley	3	1	80	Cattle slurry	60	1.2	72	24:6:12	800	48	40
9	W. Wheat	1.5	1	95	Cattle FYM	22.5	3.5	79	0:18:28	300	54	88

ANNEX M - Space Allowance for Bedded Livestock

	Mass of animal (kg)	Bedded area (m^2)	Loafing/feeding area (m^2)	Total area per head (m^2)
Dairy Cattle	200	2.0	1.0	**3.0**
	300	2.75	1.2	**3.95**
	400	3.5	1.4	**4.9**
	500	4.25	1.6	**5.85**
	600	5.0	1.8	**6.8**
	700	5.75	2.0	**7.75**
Beef Cattle	200	2.0	1.0	**3.0**
	300	2.4	1.0	**3.4**
	400	2.6	1.2	**3.8**
	500	3.0	1.2	**4.2**
	600	3.4	1.2	**4.6**
	700	3.6	1.4	**5.0**
Loose Housed Calves	Up to 60	-	-	**1.1**
	85	-	-	**1.8**
	140	-	-	**2.4**
		-		
Sheep		-		
Pregnant ewes	Grouped 68kg	-	-	**1.2**
	Grouped 90kg	-	-	**1.4**
Ewes with lambs	Individually penned	-	-	**2.2**
	Groups 68kg	-	-	**1.7**
	Grouped 90kg	-	-	**1.8**
Lambs	Groups	-	-	**1.5**
	Creep area @ 2 weeks	-	-	**0.15**
	23kg	-	-	**0.6**
	32kg	-	-	**0.8**

From BS 5502 Part 40 “The design of Livestock Holdings”.

ANNEX N - Details of Rented Storage Facilities

Part 1

Registered Owner: _____

Address: _____

_____

Location address of storage facility (if different from above)

_____

_____

Farm Survey number for location of tank | / / |

Type of Storage Facilities: Below Ground Tank ☐

Above Ground Tank ☐

Other (please specify) ☐

Enter details of storage capacity in Tables in Part 3.

Part 2 Rental Agreement and Undertaking

I, _____ , hereby certify that the above storage facilities are rented to:

Name of tenant: _____

Address of tenant:_____

_____

for the period_____ to _____

Signature of owner _____

Name in BLOCK LETTERS_____ **Date** _____

I, _____ , undertake to ensure that I have sufficient storage capacity available for stock numbers to comply with the storage requirement of the Nitrates Directive Action Programme in the event of the above storage facility not being available to me beyond the dates stated above.

Signature of Tenant _____

Name in BLOCK LETTERS_____ **Date** _____

Part 3

Table 1 Storage capacity of rectangular tanks and lagoons

Tank	Description	Length (l) (m)	Breadth (b) (m)	Adjusted Depth (d) (Depth - freeboard)(i) (m)	Volume of facilities (l x b x d) (m^3)
1					
2					
3					
4					
5					
6					
Total capacity of rectangular tanks and lagoons					m^3

Table 2 Storage capacity of above ground circular stores

Tank	Description	Radius rad (m)	Adjusted height h (m) (Height - freeboard) (i)	Volume of facilities for slurry = 3.14 x rad x rad x h (m^3)
1				
2				
3				
4				
Total capacity of above ground circular stores				m^3

(i) Freeboard is the term given to the unfilled depth (safety margin) at the top of a slurry or effluent tank or lagoon. Freeboard allowances are 750mm for earth bank lagoons and 300mm for all other structures. Freeboard is not a legal requirement for structures which are exempt under the SSAFO Regulations (structures completed before 1 December 2003, unless substantially reconstructed). However, it is considered best management practice to adhere to freeboard requirements in all structures.

ANNEX O - Example of Contractual Agreement with Processing Facilities to Export Livestock Manure for Storage Allowance

Recipient Name _____

Address _____

_____

Agreement for the period _____ to _____

Type of livestock manure _____

Amount of livestock manure _____

Exporter

I, _____, certify that the above livestock manure type and volume is **exported** in the agreed period to the above recipient.

Signed _____

Dated _____

Recipient

I, _____, certify that the above livestock manure type and volume was **imported** in the agreed period for livestock manure.

Signed _____

Dated _____

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

To calculate the Livestock Manure Storage for your farm use the following worksheets:

- Only complete Section 1 if you intend to avail of storage allowances by out-wintering or bedding livestock.
- Complete Section 2.
- Transfer the relevant figures from Section 2 to Section 3 as directed.
- Complete Section 3.
- Only complete Section 4 if you produce poultry litter.

Alternatively, you can access the 'Livestock Manure Storage Calculator' at www.ruralni.gov.uk.

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Section 1: Allowances when calculating storage requirement

1) Out-wintering livestock. Only complete if you require storage allowance for out-wintered livestock. (Follow instructions on page 82).

Table 1

Livestock Type	1 Feb	1 Oct	1 Dec	Total over winter	Average over winter =Total ÷3		N produced/ head/year (kg N)		N produced (kg N)
Sheep				**No.**	**No.**	**X**	**N**	**=**	**Answer**
Ewe/ram (over 1 year)	145	155	150	450	150	X	9	=	1350
Lambs (6-12 months)						X	3.2	=	
Lambs (0-6 months)	0	153	34	187	62	X	1.2	=	74
Deer									
Deer (red) (over 2 years)						X	25	=	
Deer (red) (6 months - 2 years)						X	13	=	
Deer (fallow) (over 2 years)						X	13	=	
Deer (fallow) (6 months - 2 years)						X	7	=	
Deer (sika) (over 2 years)						X	10	=	
Deer (sika) (6 months - 2 years)						X	6	=	
Goats									
Goat						X	9	=	
Total livestock manure nitrogen produced by out-wintered sheep, deers and goats (kg N)								**=**	**1424 V**

Livestock Type	1 Feb	1 Oct	1 Dec	Total over winter	Average over winter =Total ÷3		N produced/ head/year (kg N)		N produced (kg N)
Cattle				**No.**	**No.**	**X**	**N**	**=**	**Answer**
Suckler cow	10	50	30	90	30	X	54	=	1620
Cattle (over 2 years)						X	54	=	
Cattle (1-2 years)						X	47	=	
Cattle (0-1 year)						X	19	=	
Calves (6 months -1 year)						X	12	=	
Calves (0 - 6 months)						X	7	=	
Total livestock manure nitrogen produced by out-wintered cattle (kg N)								**=**	**1620 W**

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

1. Check potential to out-winter livestock in Table 2. Refer to the Livestock Manure Nitrogen Loading worksheet for you annual loading kg N/ha/year (stocking rate).

Table 2

Livestock type	Annual stocking rate (kg N/ha/year)
Sheep, deer and goats	**Must be below 170kg**
Cattle only (excluding dairy cows)	**Must be below 140kg**
Cattle and sheep, deer and goats	**Must be below 140kg**

If you meet the annual stocking rate limit, continue completing this section.

If you do not meet the annual stocking rate limit, you cannot avail of storage allowances for out-wintered livestock and these livestock must be included when calculating storage requirements.

2. Enter the number of livestock to be out-wintered on the farm on the first day of the months indicated.
3. Total each month and divide by 3 as shown to determine the average number.
4. Multiply the average number over the winter period by the N produced per head.
5. Total the N produced by sheep, deer and goats and insert in Box V. **Transfer your answer to Box V in Table 3 below.**
6. Total the N produced by cattle and insert in Box W. **Transfer your answer to Box W in Table 3 below.**
7. If out-wintering cattle and sheep, deer and goats, total the N produced by these livestock and insert in Box X. **Transfer your answer to Box X in Table 3 below.**
8. Enter the area of land to be used for out-wintering in Box Y.
9. Divide the livestock manure N by the land area to calculate the stocking rate.

Table 3

Livestock manure N from out-wintered sheep, deer and goats (kg)	**V**	**1424**	←	Complete section in Table 1 to calculate figure
	+	+		
Livestock manure N from out-wintered cattle (kg)	**W**	**1620**	←	Complete section in Table 1 to calculate figure
	=	=		
Total Livestock manure N from out-wintered cattle and sheep, deer and goats (kg) **(V+W)**	**X**	**3044**		
	÷	÷		
Out-wintered land area (ha)	**Y**	**40**		
	=	=		
Stocking rate on out-wintered area (kg N/ha) (X ÷ Y)	**Z**	**76**	←	**See Table 4 on page 83 to check if you can out-winter livestock**

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Table 4: Can I avail of the out-wintering allowance?

Livestock type	Stocking rate limit on out-wintered area (kg N/ha)
Sheep, deer and goats	Must be below 130kg N/ha
Cattle only	Must below 85kg N/ha
Cattle, sheep, deer and goats	If N from cattle is **more than** N from sheep/deer and goats the stocking rate must be below 85kg N/ha
Cattle, sheep, deer and goats	If N from cattle is **less than** N from sheep/deer and goats the stocking rate must be below 130kg N/ha

If you are below the out-wintered stocking rate limit(s) you can avail of storage allowances for out-wintered livestock and these livestock can be excluded when calculating storage requirements.

If you do not meet the out-wintered stocking rate limit(s) you cannot avail of storage allowances for out-wintered livestock and these livestock must be included when calculating storage requirements.

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Section 1: Allowances when calculating storage requirements

2) Bedded accommodation Worksheet

(Only complete if you require storage allowance for bedded livestock).

1. Enter the number of livestock to be out-wintered on the farm on the first day of the months indicated.
2. Total each month and then divide by 3 as shown to determine the average number over the winter.

Table 5

Livestock Type	1 Feb	1 Oct	1 Dec	Total over winter		Average over winter=Total ÷3
Cattle				**No.**	**÷ 3**	**No.**
Dairy cow					**÷ 3**	
Suckler cow	**20**	**0**	**10**	**30**	**÷ 3**	**10**
Cattle over 2 years					**÷ 3**	
Cattle 1-2 years					**÷ 3**	
Calves 6 months - 1 year					**÷ 3**	
Calves 0-6 months					**÷ 3**	
Sheep						
Ewe/ram (over 1 year)					**÷ 3**	
Lamb (6-12 months)					**÷ 3**	
Lambs (0-6 months)					**÷ 3**	
Deer						
Deer (red) over 2 years					**÷ 3**	
Deer (red) 6 mths - 2 years					**÷ 3**	
Deer (fallow) over 2 years					**÷ 3**	
Deer (fallow) 6 mths - 2 years					**÷ 3**	
Deer (sika) over 2 years					**÷ 3**	
Deer (sika) 6 mths - 2 years					**÷ 3**	
Goats						
Goat					**÷ 3**	
Pigs						
Pigs					**÷ 3**	

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Section 2: Livestock manure storage worksheet

Table A: Calculate volume of undiluted slurry per week

1. Enter the number of livestock kept on the first day of the months indicated. Exclude livestock numbers if they meet the out-wintering and/or bedded eligibility. For pigs and poultry, enter the average number on the unit.
2. Total each month and divide by 3 as shown to determine the average number.
3. Multiply the average number over the winter period by the volume of slurry produced per animal per week.
4. Total the volume of slurry produced by cattle and sheep insert in Box A. **Transfer your answer to Section 3, Box A on page 90.**
5. Total the volume of slurry produced by pigs and poultry and insert in Box B. **Transfer your answer to Section 3, Box B on page 90.**

Livestock Type	**1 Feb**	**1 Oct**	**1 Dec**	**Total over winter**	**Average over winter =Total**		**Slurry/ animal/ week (m^3/week)**		**Slurry produced/ week (m^3/week)**
Cattle				**No.**	**No.**	**X**	**V**	**=**	**Answer**
Dairy cow						X	0.37	=	
Suckler cow	20	0	10	30	10	X	0.23	=	2.3
Cattle over 2 years						X	0.23	=	
Cattle 1-2 years						X	0.18	=	
Calves 6 months -1 year	48	48	48	144	48	X	0.09	=	4.32
Calves 0-6 months	48	48	48	144	48	X	0.05	=	2.4
Sheep									
Adult ewe/ram						X	0.03	=	
Fattening Lamb						X	0.01	=	
Total volume undiluted cattle and sheep slurry per week (m^3/week)								**=**	**9.02 A**
Pigs					**Average No. on unit**	**X**	**V**	**=**	**Answer**
Maiden gilt 90-130kg						X	0.05	=	
1 sow and litter 130-225kg						X	0.08	=	
1 weaner (stage 1) 7-18kg						X	0.01	=	
1 grower (stage 2) 18-35kg						X	0.02	=	
1 Finisher meal fed (stage 3) 35-105kg						X	0.03	=	
1 Finisher liquid fed (stage 3) 35-105kg						X	0.05	=	
Poultry									
1000 laying hens						X	0.81	=	
1000 ducks						X	0.81	=	
Total Volume undiluted pig and poultry slurry per week (m^3/week)								**=**	**B**

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Table B: Calculate volume of rainfall falling on yards where slurry is produced plus the volume of rainfall entering unroofed tanks (per week).

1. Enter the dimensions of the yards and/or tanks and multiply them by the rainfall per week.
2. Total the volume produced by cattle and sheep and insert in Box C. **Transfer your answer to Section 3, Box C on page 90.**
3. Total the volume produced by pigs and poultry and insert in Box D. **Transfer your answer to Section 3, Box D on page 90.**

Rainfall falling on unroofed yards where slurry is produced						
Area	**Description**	**Length (m)**	**Breadth (m)**	**Rainfall per week (m)[1]**	**Volume Cattle & Sheep (m^3)**	**Volume Pigs & Poultry (m^3)**
		l	**b**	**R**	**l x b x R**	**l x b x R**
1	Cattle standing area	10	5	0.025	1.25	
2	Feeding area	15	3	0.025	1.12	
3				0.025		
4				0.025		
5				0.025		
6				0.025		
7				0.025		
8				0.025		
9				0.025		
Rainfall entering unroofed rectangular tanks, unroofed middens and earth bank lagoons						
1				0.025		
2				0.025		
3				0.025		
4				0.025		
5				0.025		
Rainfall entering unroofed above ground circular stores						
Area	**Description**	**Radius (m) (m)**		**Rainfall per week (m)[1]**	**Volume Cattle & Sheep (m^3)**	**Volume Pigs & Poultry (m^3)**
		r		**R**	**(r x r x 3.14 x R)**	**(r x r x 3.14 x R)**
1				0.025		
2				0.025		
3				0.025		
4				0.025		
Total volume of rainfall collected as slurry per week (m^3)					2.37 C	D

Notes:

[1] Rainfall/week is the Northern Ireland average over the winter months (October-March).

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Table C: Calculate the total volume of dirty water collected as slurry per week

1. Enter the dimensions of the yards and/or tanks and multiply them by the rainfall per week.
2. Total the volume produced by cattle and sheep and insert in Box E. **Transfer your answer to Section 3, Box E on page 90.**
3. Total the volume produced by pigs and poultry and insert in Box F. **Transfer your answer to Section 3, Box F on page 90.**

Water from clean yards and roofs entering tanks						
Area	**Description**	**Length (m)**	**Breadth (m)**	**Rainfall per week (m)[1]**	**Volume Cattle & Sheep (m^3)**	**Volume Pigs & Poultry (m^3)**
		l	**b**	**R**	**l x b x R**	**l x b x R**
1	Side yard	10	3	0.025	0.75	
2	Feeding area	15	4	0.025	1.5	
3				0.025		
4				0.025		
Other yard water, surface run-off from open silos and washings						
1				0.025		
2				0.025		
3				0.025		
4				0.025		
5				0.025		
Dairy parlour washings (m^3) [2]	No.of cows _____			0.13		**N/A**
Building washings - poultry[3]	No. of batches _____ X floor area _____ m^2			0.007	**N/A**	
Building washings - pigs[4]	No. of pigs moved out of pens/week _____			0.02	**N/A**	
Building washings - cattle[5] (excludes parlour washings)	Insert actual volume of water used per week					**N/A**
Building washings - sheep[5]	Insert actual volume of water used per week					**N/A**
Total volume of dirty water collected as slurry per week (m^3)					**2.25 E**	**F**

Notes:

[1] Rainfall/week is the Northern Ireland average over the winter months (October-March).

[2] For volume of dairy parlour washings use 0.13m^3 per cow per week. If your milking plant is significantly different use the actual amount.

[3] For poultry house washings use 6.8 litres (0.007m^3) per m^2 per batch. If your washing system is significantly different use your own actual figures.

[4] For pig house washings, use 1.8 litres (0.002m^3) per pig moved out of pens. If your washing system is significantly different use your own actual figures.

[5] For cattle and sheep house washings, use your own actual figures.

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Table D: Calculate the total volume of separated solids from slurry per week

1. Enter the type of slurry separated (cattle and sheep only).
2. Enter the volume of this slurry type produced per week. (Refer to Table A for the relevant figure).
3. Multiply the volume by the % reduction figure. The maximum volume reduction allowed is 20%.
4. Total volume of separated slurry per week and insert in Box G. **Transfer your answer to Section 3, Box G on page 90.**

Slurry Type	Volume of slurry produced per week		% reduction by separation		Volume of separated solids per week
	v	x	%	=	(m^3)
		x		=	
		x		=	
		x		=	
Total volume of separated solids per week (m^3)				=	G

Table E: Calculate the total volume of slurry exported to processing per week

1. Enter the type of slurry exported to processing.
2. Enter the volume of slurry produced and exported over the winter period. Divide by 22 for cattle and sheep slurry and 26 for pig and poultry slurry, to calculate the volume exported per week.
3. Total the volume produced by cattle and sheep and insert in Box H. **Transfer your answer to Section 3, Box H on page 90.**
4. Total the volume produced by Pigs and Poultry and insert in Box I. **Transfer your answer to Section 3, Box I on page 90.**

Slurry Type	Volume of slurry exported (m^3)			Volume of cattle & sheep slurry exported per week (m^3)	Volume of pig & poultry slurry exported per week (m^3)
	v	÷ 22 or ÷ 26	=	v	v
		÷ 22 or ÷ 26	=		
		÷ 22 or ÷ 26	=		
		÷ 22 or ÷ 26	=		
Total volume of slurry exported to processing per week (m^3)			=	H	I

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Table 6: Calculate the storage capacity of rectangular tanks, earth bank lagoons and above ground stores.

1. Enter the dimensions of tanks, lagoons, and above ground stores and multiply them to determine the capacity.
2. Total the capacity for cattle and sheep and insert in Box L. **Transfer your answer to Section 3, Box L on page 90.**
3. Total the capacity for pigs and poultry and insert in Box M. **Transfer your answer to Section 3, Box M on page 90.**

Storage capacity of rectangular tanks, and concrete lagoons						
Area	**Description**	**Length (m)**	**Breadth (m)**	**Adjusted depth (depth-freeboard)(i) (m)**	**Capacity Cattle & Sheep (m^3)**	**Capacity Pigs & Poultry (m^3)**
		l	**b**	**h**	**l x b x h**	**l x b x h**
1	Big tank	25	4	1.8	180	
2	Small tank	10	8	1.8	144	
3						
4						
5						
6						
7						
Storage capacity of earth bank lagoons						
1						
2						
3						
4						
Storage capacity of above ground circular stores						
Area	**Description**	**Radius (m)**		**Adjusted depth (depth-freeboard)(i) (m)**	**Capacity Cattle & Sheep (m^3)**	**Capacity Pigs & Poultry (m^3)**
		r		**h**	**(r x r x 3.14 x h)**	**(r x r x 3.14 x h)**
1						
2						
3						
4						
Total capacity of tanks, lagoons and stores (m^3)					**324 L**	**M**

(i) Freeboard is the term given to the unfilled depth (safety margin) at the top of a slurry or effluent tank or lagoon. Freeboard allowances are 750mm for earth bank lagoons and 300mm for all other structures. Freeboard is not a legal requirement for structures which are exempt under the SSAFO Regulations (structures completed before 1 December 2003, unless substantially reconstructed). However, it is considered best management practice to adhere to freeboard requirements in all structures.

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Section 3 – Livestock manure storage calculation

Step 1: Volume of slurry produced per week

Enter the volume of slurry and dirty water collected as slurry produced on the farm in the relevant boxes.

Volume produced per week (m³)	Cattle & sheep		Pigs & poultry			
Undiluted slurry produced	A	9.02	B		←	Complete Section 2, Table A on page 85 to calculate figure
	+	+	+	+		
Rain on yards where slurry is produced and rain entering open tanks	C	2.37	D		←	Complete Section 2, Table B on page 86 to calculate figure
	+	+	+	+		
Dirty water collected as slurry	E	2.25	F		←	Complete Section 2, Table C on page 87 to calculate figure
	-	-	-	-		
Separated solids from cattle and sheep slurry	G				←	Complete Section 2, Table D on page 88 to calculate figure
	-	-	-	-		
Slurry exported to processing	H		I		←	Complete Section 2, Table E on page 88 to calculate figure
	=	=	=	=		
Total volume of slurry produced per week (m³)	J	13.64	K			

Step 2: Tank capacity

To calculate the information required for Step 2, complete Table 6 in Section 2 on page 89 and transfer your answer to the relevant box(es) below.

	Cattle & sheep		Pigs & poultry			
Storage capacity of tanks, stores and lagoons on the farm (m³)	L	324	M		←	Transfer answer from Table 6, on page 89.

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Step 3: Weeks Storage Capacity

Divide the total storage capacity of tanks, stores and lagoons by the volume of slurry and dirty water to be collected per week.

Volume produced per week (m^3)	Cattle & sheep		Pigs & poultry			
Storage capacity of tanks, stores and lagoons on the farm	L	324	M		←	Transfer answer, from Step 2, page 90
	÷	÷	÷	÷		
Total volume of slurry and dirty water to be collected per week	J	13.64	K		←	Transfer answer, from Step 1, page 90
	=	=	=	=		
Weeks storage capacity	O	23.7	P		←	Do you have enough storage?

Do you have enough storage?

Livestock Type	Weeks storage required
Cattle and sheep	22
Pigs – **less than** 10 breeding sow places or 150 finishing pig places	22
Pigs – **more than** 10 breeding sow places or 150 finishing pigs places	26
Poultry - **less than** 500 poultry places	22
Poultry - **more than** 500 poultry places	26
Mixed enterprise – pig/poultry and other livestock	22 (other livestock) 26 (pigs/poultry)

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Section 4 - Poultry Litter Production and Storage Worksheet

Table A: Volume of Poultry Litter produced per week

1. Enter the average number of birds on the unit at any one time.
2. Multiply the average number by the quantity of manure produced per 1000 birds per week.
3. Total the quantity of litter produced and insert in Box A. **Transfer your answer to Table C Box A on page 93.**

Livestock Type	Average number on the unit		Quantity of litter produced per week (t)		Total quantity of litter produced per week (t)
	No.	X	v	=	vm
1000 broilers and litter		X	0.41	=	
1000 broiler breeders		X	0.38	=	
1000 replacement pullets		X	0.39	=	
1000 turkeys (male) and litter		X	1.10	=	
1000 turkeys (female) and litter		X	0.53	=	
1000 ducks		x	2.02	=	
Total volume of poultry litter produced per week (tonnes)				=	A

Table B: Calculate the total volume of poultry litter exported to processing per week

1. Enter the type of poultry litter exported to processing.
2. Enter the quantity of poultry litter produced and exported over the winter period and divide by 26 to calculate the quantity exported per week.
3. Total the volume exported and insert in Box B. **Transfer your answer to Table C Box B on page 93.**

Manure Type	Quantity of litter exported per year (tonnes)			Total quantity of poultry litter exported per week (m^3)
	t	÷ 26	=	v
		÷ 26	=	
		÷ 26	=	
		÷ 26	=	
Total volume of poultry litter exported to processing per week (tonnes)			=	B

ANNEX P - Example Worksheet: Calculating Livestock Manure Storage

Table C: Calculate the quantity of poultry litter requiring storage

Total quantity of poultry litter produced per week (tonnes)	A		←	Transfer answer from, Table A, Box A, page 92
	-	-		
Total quantity of poultry litter exported to process per week (tonnes)	B		←	Transfer answer from, Table B, Box B, page 92
	=	=		
Total quantity of poultry litter requiring storage per week (tonnes) **(A - B)**	C		←	

Until 31 December 2008, when the position will be reviewed, poultry litter may be stored in a midden or in the field where land application will take place until the next application, but for no longer than 180 days.

The poultry litter must be stored in a compact heap and covered with an impermeable membrane within 24 hours of placement in the field. It must not be stored in the same location of the field year after year.

Where poultry litter is stored in a midden adequate storage facilities with effluent collection must be provided prior to field storage. If the effluent containment facilities are new, or substantially enlarged or substantially reconstructed (after 1 December 2003), they must comply with the British Standards specified in the SSAFO Regulations regardless whether they were or were not grant funded by DARD.

ANNEX Q – Example of Record Required For Imported and Exported Livestock Manures

Date moved	Imported or exported	Type of livestock manure	Quantity (tonnes or m^3) (A)	N content of manure kg/m^3 or kg/t (See Annex E) (B)	Total N kg (A x B)	Transporters' name and address	Recipient or donors name and address
14/9/2007	Exported	Pig Slurry	50	4	200	John Smith 1 Farmview Rd	John Smith 1 Farmview Rd
20/9/2007	Exported	Pig Surry	50	4	200	John Smith 1 Farmview Road	John Smith 1 Farmview Road

(m^3 = 220 gallons)

Any total N kg imported should be added on to the total nitrogen excretion for the livestock manure nitrogen calculation. Any exported livestock manure should be subtracted.

ANNEX R - Example of Record Required for Fertiliser Details

Opening stocks of chemical fertilisers 1 January 2007

Fertiliser type, for example, 25:5:5	Quantity (tonnes)
26:5:5	1.6

Chemical fertilisers (purchased/imported and sold/exported)

Date	NPK Content	Amount purchased or imported onto farm in tonnes	Amount sold or exported off farm in tonnes
9/2/2007	27:0:0	26.25	
11/3/2007	46:0:0	2.4	
12/3/2007	24:6:12	0.8	
15/3/2007	0:18:28	0.3	
1/4/2007	26:5:5	1.6	

Closing stocks of chemical fertilisers 31 December 2007

Fertiliser type, for example, 25:5:5	Quantity (tonnes)
27:0:0	1

ANNEX S - Conversion Factors

Volumes

1 cubic metre (m^3) = 1000 litres
1 cubic metre (m^3) = 220 gallons
1 litre (l) = 0.22 gallons
1 gallon = 0.0045m^3 or 4.55 litres
1000 gallons = 4545 kilograms (4.5 tonnes)

Area

1 hectare (ha) = 10,000 square metres (m^2)
1 hectare (ha) = 2.4711 acres
1 acre = 0.405 hectares

Weight

1 kilogram (kg) = 2.205 pounds
1 pound = 0.4536 kilogram
1 tonne = 1000kg
1 metric tonne (t) = 0.98 imperial ton

Application rates

1m^3 per hectare = 90 gallons per acre
1 gallon per acre = 0.011m^3 per hectare
50,000 litres per hectare = 50m^3 per hectare = 4,500 gallons per acre
1 tonne per hectare = 0.4 ton per acre
1 ton per acre = 2.5 tonnes per hectare.

Fertilisers

1 unit per acre = 1.25 kilograms per hectare (kg/ha)
1kg/ha = 0.8 units/acre
1kg P = 2.29 kg P_2O_5 1kg P_2O_5 = 0.44kg P

Notes:

A ‘unit’ is 1% of 1 hundredweight, or 1.12lb
Tonne = metric tonne
Ton = imperial ton

ANNEX T - Contact Details

Department of Agriculture and Rural Development (DARD)

	Tel. No.	Fax No.
Internet: www.dardni.gov.uk **Headquarters** Dundonald House, Upper Newtownards Rd, Belfast, BT4 3SB	028 9052 0100	028 9052 3127

	Tel. No.	Fax No
Countryside Management Branch **E-mail:** cmbenquires@dardni.gov.uk **Headquarters:** Lindesay Hall, Loughry Campus, Cookstown, Co. Tyrone	028 8675 7507	028 8675 7511

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Co. Down Market Street, Downpatrick, BT30 6LZ	028 4461 2211
Co. Fermanagh Inishkeen House, Killyhevlin, Enniskillen, BT74 4EJ	028 6632 5004
Co. Derry/Londonderry Crown Buildings, Artillery Road, Coleraine, BT52 2AJ	028 7034 1111
Co. Tyrone Sperrin House, Sedan Avenue, Omagh, BT79 7AQ	028 8225 1020

Department of the Environment (DOE)

Environment and Heritage Service
Internet - www.ehsni.gov.uk

Water Management Unit
17 Antrim Rd,
Lisburn
BT28 3AL

General Enquiries	028 9262 3100
Nitrates Regulations	028 9262 3184
SSAFO Regulations	028 9262 3102
Groundwater Authorisations	028 9262 3278
Sewage Sludge to Land	028 9262 3278
Water Pollution Hotline	0800 80 70 60
(A 24-hour confidential hotline for reporting pollution incidents)	
Fax Number	028 9267 6054

Notes

Our aim is to protect, conserve and promote the natural and built environment for the benefit of present and future generations.

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ISBN 978 1 85527 983 4