



Nitrates Action Programme 2011-2014 and Phosphorus Regulations Guidance Booklet



Department of
**Agriculture and
Rural Development**

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To request an alternative format, please contact us:

DARD Countryside Management Unit, Lindesay Hall,
Loughry Campus, Loughry, Cookstown,
Co. Tyrone, BT80 9AA

Telephone: 028 8675 7507

Textphone: 0845 30 44 511

Fax: 028 8675 7511

Email cmbenquiries@dardni.gov.uk

Foreword

The Nitrates Action Programme Regulations (Northern Ireland) 2010 (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 2011. The guidance booklet replaces the 2007 publication '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'. This booklet shown below is related to the period 2007-2010.

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.

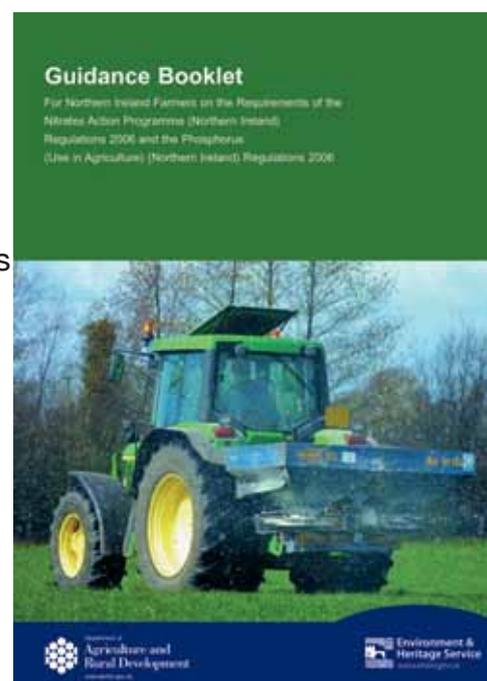
Annexes - information to assist in understanding and compliance of the Regulations.

Further information, and advice can be obtained from the points of contact provided in Annex O, page 80.

A NAP Guidance Workbook can be accessed online at www.dardni.gov.uk/ruralni/environment/countrysidemanagement or www.doeni.gov.uk/niea. Alternatively, you can access the 'College of Agriculture, Food and Rural Enterprise (CAFRE) Farm Nutrient Management Calculators' at www.dardni.gov.uk/onlineservices.

Further information about operating under a NAP derogation can be found in the NAP Derogation Guidance Booklet which can be accessed online at www.dardni.gov.uk or www.doeni.gov.uk/niea. Farms with at least 80% grassland may apply annually on or before 1 March to NIEA for a derogation to permit the land application of up to 250kg N/ha/year from grazing livestock manure. Additional conditions and Cross-Compliance verifiable standards will apply.

It should be noted that the guidance referring to NAP and Phosphorus Regulations contained in the Code of Good Agricultural Practice for the Prevention of Pollution of Water, published by DARD in 2008, is superseded by this guidance from 1 January 2011.



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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
324 m³ of storage capacity
Out-winters and straw beds livestock

Introduction

The Nitrates Directive (91/676/EEC) (the Directive) aims to improve water quality by protecting water against pollution caused by nitrates from agricultural sources. In particular, it is about promoting better management of animal manures, chemical nitrogen fertilisers and other nitrogen-containing materials spread onto land. The Nitrates Action Programme Regulations (Northern Ireland) 2006 (2006 NAP Regulations) were introduced to meet the requirements of the Directive, improve the use of nutrients on farms and as a result improve water quality throughout Northern Ireland. At the same time the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2006 (Phosphorus Regulations) were introduced to support these objectives.

A number of water quality problems affect the groundwaters, rivers and lakes of Northern Ireland and extend 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 Directive also requires action programmes to be reviewed and, where necessary, revised, at least every four years. This process was carried out in 2010 and a revised action programme has now been set out in the Nitrates Action Programme Regulations (Northern Ireland) 2010 (NAP Regulations) which update and replace the 2006 NAP Regulations. The NAP Regulations and the Phosphorus Regulations apply to all agricultural land in Northern Ireland.

This guidance booklet is compiled in a question and answer format.

Additional booklets about the NAP Derogation are available on request from DARD and NIEA. Contact details may be found on page 80. The NAP Derogation booklets are also available on-line at www.dardni.gov.uk/ruralni/environment/countrysidemanagement and www.doeni.gov.uk/niea.

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 9, 10 and 11, 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. A summary of all Cross-Compliance requirements may be found on-line at www.dardni.gov.uk/index/grants-and-funding/cross-compliance.

Key changes

The key changes from the previous NAP to the current NAP are summarised below.

- Farmyard manure (FYM) is subject to a closed spreading period from 31 October until 31 January.
- The spreading distance from any waterway for the application of chemical nitrogen fertiliser has increased from 1.5m to 2m.
- Until 31 December 2012, FYM may be stored in field heaps where it is to be applied but for no longer than 180 days. After that date such FYM field heaps are permitted but for no longer than 120 days. FYM field heaps must not be located on land that is waterlogged, flooded or likely to flood.
- Poultry litter
 - may be stored in field heaps until 30 September 2011. Field storage of poultry litter is to be reviewed in 2011.
 - may only be stored in field heaps for a maximum of 180 days in the field where it is to be applied and must be covered with an impermeable membrane within 24 hours of placement in the field.
- All fertilisers, chemical and organic, must not be applied on steep slopes (that is an average incline of 20% or more on grassland or an average incline of 15% or more on all other land) where other significant risks of water pollution exist. Risk factors to be considered include the proximity to waterways, the time to incorporation, the type and amount of fertiliser being applied and / or the soil and weather conditions.
- Farmers must manage silage effluent collection and storage facilities to prevent pollution.
- Clarification has been provided on who may be responsible for different offences under the Regulations. Additional information can be found in Section 1.
- Pig excretion rates and the nitrogen content of pig slurry have been reduced.
- A greater range of standard phosphorus contents of agricultural products and feedstuffs for those farms operating under derogation have been provided.

Table 1: Summary of Nitrates Action Programme and Phosphorus Regulations

Verifiable standards	Key Measures
Closed Spreading Periods	<ul style="list-style-type: none"> • Chemical nitrogen fertiliser must not be applied from midnight 15 September to midnight 31 January. • Organic manures, including slurry, poultry litter, sewage sludge and abattoir waste, must not be applied from midnight 15 October to midnight 31 January. • Farmyard manure (FYM) must not be applied from midnight 31 October to midnight 31 January. • There is no closed spreading period for dirty water. Land application restrictions listed below apply to spreading of all fertilisers, including dirty water.
Land Application Restrictions	<ul style="list-style-type: none"> • All fertilisers, <u>chemical and organic</u>, must not be applied: <ul style="list-style-type: none"> • on waterlogged soils, flooded land or land liable to flood; • on frozen ground or snow covered ground; • if heavy rain is forecast in the next 48 hours; • on steep slopes (that is an average incline of 20% or more on grassland or an average incline of 15% or more on all other land) where other significant risks of water pollution exist. Risk factors to be considered include the proximity to waterways, the length of time to incorporation, the type and amount of fertiliser being applied and / or the soil and weather conditions. • 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 nitrogen fertilisers must not be applied within 2m of any waterway. • Organic manures including dirty water must not be applied within: <ul style="list-style-type: none"> • 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 ha in size or not more than 50m in width. • Application rates: <ul style="list-style-type: none"> • No more than 50m³/ha (4500 gal/ac) or 50 tonnes/ha (20t/ac) of organic manures to be applied at one time, with a minimum of 3 weeks between applications; • No more than 50m³/ha (4500 gal/ac) of dirty water to be applied at one time, with a minimum of 2 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.

Verifiable standards	Key Measures						
Chemical Nitrogen Fertiliser Crop Requirement	<p style="text-align: center;"><u>Maximum kg N/ha on grassland</u></p> <table border="0"> <tr> <td>Dairy farms*</td> <td>272</td> <td>(8¼ bags**/ac)</td> </tr> <tr> <td>Other farms</td> <td>222</td> <td>(6¾ bags**/ac)</td> </tr> </table> <p>(Nitrogen from organic manures other than livestock must be subtracted.) For non-grassland crops, the crop requirement is determined by the latest edition of RB209. For arable and forage crops, in situations where the soil type is uncertain, the guidance found in Annex G may be used to assess the maximum crop nitrogen requirement.</p>	Dairy farms*	272	(8¼ bags**/ac)	Other farms	222	(6¾ bags**/ac)
Dairy farms*	272	(8¼ bags**/ac)					
Other farms	222	(6¾ bags**/ac)					
Chemical Phosphorus Fertiliser	Can only apply chemical fertilisers containing phosphorus if soil analysis shows a requirement as determined by the latest edition of RB209. ***						
Livestock Manure Nitrogen Limits	<ul style="list-style-type: none"> • 170kgN/ha/year farm limit. • Farms with at least 80% grassland may apply annually on or before 1 March to NIEA for a derogation to permit the land application of up to 250kg N/ha/year from grazing livestock manure. Additional conditions and Cross-Compliance verifiable standards will apply. Further guidance is available from NIEA. 						
Livestock Manure and Silage Effluent Storage Requirements	<ul style="list-style-type: none"> • 26 weeks livestock manure storage capacity 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, poultry litter stored in a midden or field heap and exporting manure to approved outlets. • Livestock manure and silage effluent storage must be maintained and managed to prevent seepage or run-off. • New or substantially enlarged or reconstructed stores must comply with the Silage, Slurry and Agricultural Fuel Oil (Northern Ireland) (SSAFO) Regulations, 2003. • FYM storage: <ul style="list-style-type: none"> - FYM may be stored in middens with adequate effluent collection facilities. - Until 31 December 2012, FYM may be stored in field heaps where it is to be applied but for no longer than 180 days. - From 1 January 2013 FYM may be stored in field heaps for a maximum of 120 days. - FYM field heaps must not be located on land that is waterlogged, flooded or likely to flood. • Poultry litter storage <ul style="list-style-type: none"> - Poultry litter may be stored in middens with adequate effluent collection facilities. - Poultry litter may be stored in field heaps until 30 September 2011. - Poultry litter may only be stored in field heaps for a maximum of 180 days in the field where it is to be applied and must be covered with an impermeable membrane as soon as possible but within 24 hours of placement in the field. - Field storage of poultry litter is to be reviewed in 2011. 						

* More than 50% of nitrogen in livestock manure comes from dairy cattle.

** Approximate number of 50kg bags of a 27% nitrogen type fertiliser.

*** Not a verifiable standard under Cross-Compliance, but compliance with the Phosphorus Regulations is a legal requirement.

Verifiable standards	Key Measures
Livestock Manure and Silage Effluent Storage Requirements (continued)	<ul style="list-style-type: none"> • FYM and poultry litter field heaps must not be stored: <ul style="list-style-type: none"> • in the same location of the field year after year; • within 50m of lakes; • within 20m of a waterway; • within 50m of a borehole, spring or well; • within 250m of a borehole used for a public water supply; • within 50m of exposed cavernous or karstified limestone features. • Provide storage for dirty water during periods when conditions for land application are unsuitable.
Land Management	<ul style="list-style-type: none"> • Crop and soil management to minimise soil erosion and nutrient run off.
Record Keeping	<ul style="list-style-type: none"> • 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 control over the agricultural area and the right to graze common land. <p>Many of these records already exist on farms, for example, SAF / IACS form, farm maps, herd and flock records and fertiliser receipts.</p> <ul style="list-style-type: none"> • Records to be ready by 30 June each year for the period 1 January to 31 December of previous year. • Records to be available for inspection from previous five calendar years. • If you are operating under an approved derogation, you must keep your fertilisation plan on farm and have it ready for inspection by 1 March for that calendar year. Your fertilisation account for the previous calendar year must be submitted to NIEA on or before 1 March.

Section 1

Nitrates Action Programme (Northern Ireland) Regulations 2010 and Phosphorus (Use In Agriculture) (Northern Ireland) Regulations 2006

1.1 Who is responsible for complying with the rules?

In general, the controller of the land is responsible for complying with the NAP and Phosphorus Regulations.

For some regulations, in particular those concerned with record keeping, and compliance with capacities and limits, the controller will be held responsible for any offence. For other regulations within the NAP Regulations, in particular those concerned with management and application of nitrogen fertiliser, an “appropriate person” will be held responsible for any offence.

In the NAP Regulations the “appropriate person” is defined as the controller; any person permitted by the controller to carry out, on their behalf, any activity described in the Regulations; the owner of any storage facility used for the storage of livestock manure and silage effluent, or any person using such storage facilities for the storage of livestock manure and silage effluent.

Some general examples of who would be held responsible for an offence under the NAP Regulations are outlined in the table below. However, it should be noted that, in any situation where a breach of the Regulations is identified, responsibility for an offence will be examined on a case by case basis by NIEA.

Table 2. Some example scenarios of who could be held responsible for an offence

	Controller	Other appropriate person (contractor, owner of slurry tank)
Example breach scenario	Responsible for offence?	Responsible for offence?
Insufficient records kept to allow assessment of nitrogen loading	Yes	No
Organic manure spread too close to waterway by contractor - evidence that controller had instructed contractor to comply with NAP Regulations spreading distances	No	Yes

	Controller	Other appropriate person (contractor, owner of slurry tank)
Example breach scenario	Responsible for offence?	Responsible for offence?
Organic manure spread too close to waterway by contractor - no evidence that controller had instructed contractor to comply with NAP spreading distances	Yes	Yes
Rented slurry tank with structural crack in wall - evidence in rental agreement that owner was responsible for maintenance	No	Yes
Rented slurry tank with structural crack in wall - evidence in rental agreement that controller was responsible for maintenance	Yes	No

Breaches of the NAP Regulations will also be reported to the Department of Agriculture and Rural Development (DARD) who are responsible for applying any reductions in payments in respect of certain direct agricultural support measures (including Single Farm Payment). In most cases any reduction will be applied to the claimant to whose farm business the breach is related.

The owner of land is assumed to be the controller and responsible for the land from **1 January to 31 December** in any year unless evidence can be provided to the contrary. This evidence can either be if you are claiming Single Farm Payment (SFP) on the land for that period, or there is a written agreement between the owner and the tenant, establishing control of that 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.

It is the responsibility of the parties concerned to provide evidence that a written agreement exists. It is best practice that a written agreement should be signed and dated by the parties concerned.

A written agreement should transfer the responsibility for compliance with the NAP and Phosphorus Regulations only and does not affect other SFP obligations.

Table 3. Some example scenarios of who is the controller of the land

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

For claimants of SFP remember that all land farmed must be included on the SAF / 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 and maintain a record of fertiliser applied.

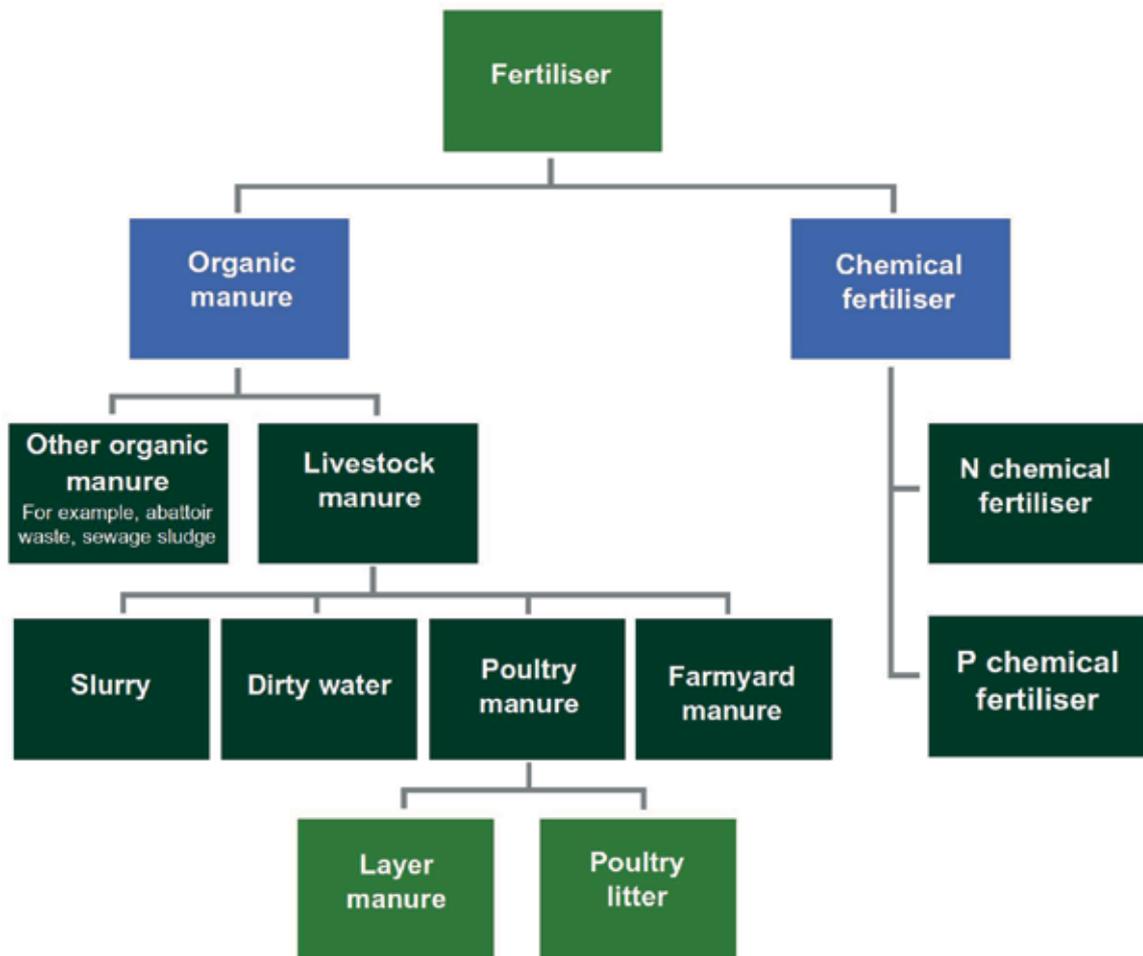
In common ground there is a collective responsibility for all farmers to comply.

Farming activities on land outside Northern Ireland will have to comply with the respective NAP for that country.

1.2 What is fertiliser?

Fertiliser for the purposes of the NAP 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 in figure 1.

Figure 1. Fertiliser types and how they relate to each other



1.3 Timescale

1.3.1 When do the Regulations become effective?

The NAP Regulations 2011-2014 became effective on 1 January 2011. These Regulations replace and update the previous 2006 NAP Regulations which became effective in 2007.

The Phosphorus Regulations became effective on 1 January 2007.

1.4 Your duty not to cause pollution

The NAP Regulations and the Phosphorus Regulations place a general duty on controllers, and those working for them to prevent water pollution by ensuring that fertiliser (both chemical and organic) does not enter waterways or water in underground strata.

As well as the specific measures laid out in the Regulations, controllers must make sure that run-off from areas such as livestock housing and walkways, and sheds and yards used by livestock or to store fertiliser and manures does not enter waterways, storm drains or underground strata.

Further guidance on management of these areas can be found in the Code of Good Agricultural Practice (COGAP) for the Prevention of Pollution of Water. Copies of COGAP are available online at www.dardni.gov.uk/ruralni/environment/countrysidemanagement.

1.5 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. Chemical phosphorus fertiliser may be applied at any time if a need can be demonstrated.

1.5.1 What are the closed spreading periods for nitrogen fertiliser?

Table 3. Summary of the closed spreading periods for nitrogen fertiliser

Fertiliser type	Closed period starts	Closed period ends
Chemical nitrogen fertiliser*	Midnight 15 September	Midnight 31 January
Slurry, poultry litter and other organic manures, for example sewage sludge and abattoir waste	Midnight 15 October	Midnight 31 January
Farmyard manure	Midnight 31 October	Midnight 31 January

* 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.

There is no closed spreading period for dirty water. Land application restrictions listed in section 1.6 apply to spreading of all fertilisers, including dirty water.

1.6 Applying fertiliser

1.6.1 Are there restrictions on how I apply my fertiliser?

Yes. All fertiliser types (including slurry, FYM and chemical nitrogen fertiliser) must be applied as accurately and uniformly as possible and must not be applied in a location or manner, including dumping, which would make it likely that it will directly or indirectly enter a waterway or water in underground strata.

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

Yes.

You must not apply fertiliser when:

- soil is waterlogged. This is when water appears on the surface of the land when pressure is added;
- land is flooded or likely to flood;
- soil has been frozen for 12 hours or longer;
- land is snow covered;
- heavy rain is forecast within the next 48 hours; or
- where land is steeply sloping (that is an average incline of 20% or more on grassland or an average incline of 15% or more on all other land) and other significant risks of water pollution exist. Risk factors to be considered include the proximity to waterways, the time to incorporation, the type and amount of fertiliser being applied and the soil and weather conditions.

1.6.3 What is steeply sloping land?

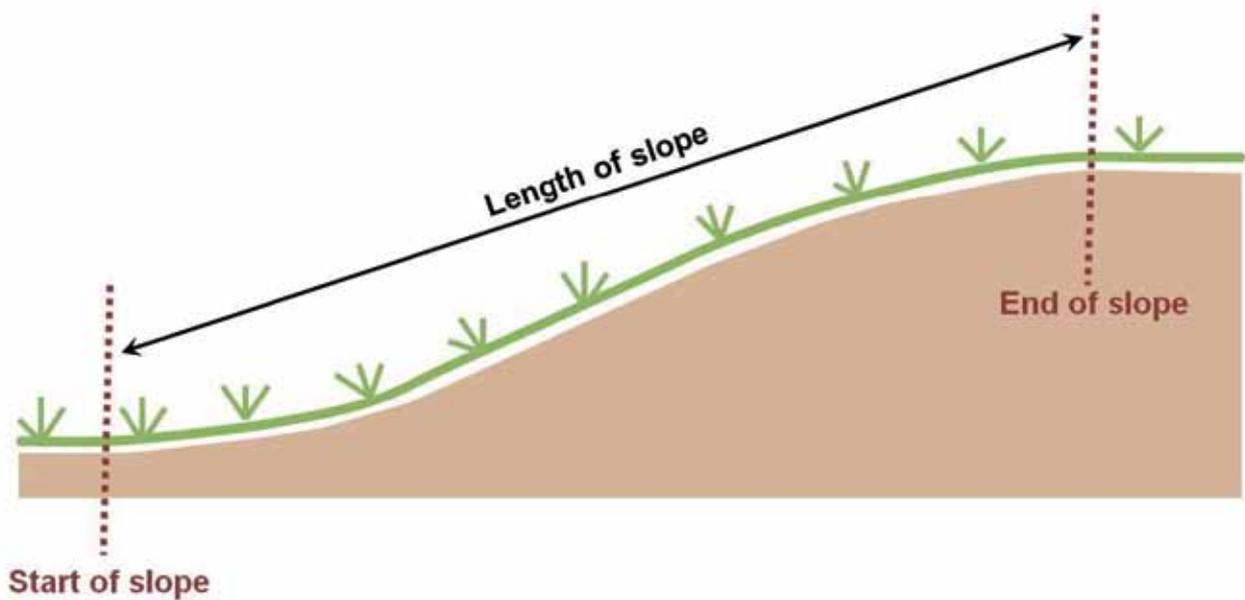
There are two factors which are used to determine the steepness of a slope:

- A. the length of the slope and
- B. the percentage incline of the slope over that length.

A. Length of the slope

The slope must measure a minimum of 100m in length from the start of the incline to the end of the incline.

Figure 2. Measuring the length of a slope



If the length of the slope is greater than 100m, you must consider the percentage incline of the slope as outlined below.

B. Percentage incline of the slope

The definition of steeply sloping land under the NAP Regulations varies depending on whether the land is in grass or in a crop other than grass.

Grassland

The NAP Regulations define grassland with an average incline of 20% or more as steeply sloping. This can also be expressed as an incline of 1:5. From the diagram on page 19 you can see that a 20% slope provides a 1 metre rise for every 5 metres travelled along a horizontal plane. You are only required to make a visual assessment of a slope.

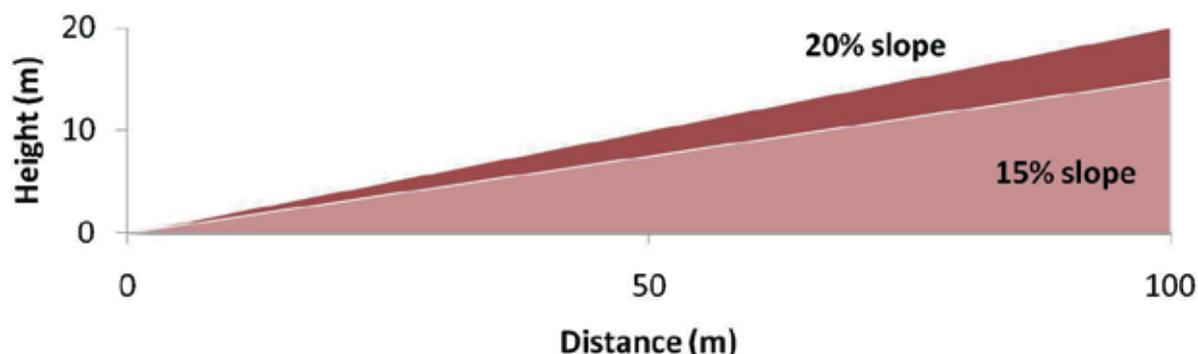
If the length of the slope is 100m or more and the average incline of the land is 20% or more you are required to carry out a risk assessment as outlined in section 1.6.4 before spreading.

Crops other than grass

The NAP Regulations define land other than grassland with an average incline of 15% or more as steeply sloping. This can also be expressed as an incline of 1:6.6. From the diagram on page 19 you can see that a 15% slope provides a 1 metre rise for every 6.6 metres travelled along a horizontal plane. You are only required to make a visual assessment of a slope.

If the length of the slope is 100m or more and the average incline of the land is 15% or more you are required to carry out a risk assessment as outlined in section 1.6.4 before spreading.

Figure 3. Graph to demonstrate a 20% slope and a 15% slope



If you have determined that a slope is steeply sloping, you must carry out a risk assessment as outlined in section 1.6.4 and in annex A to determine if you can spread fertiliser (including organic manures).

Few areas in Northern Ireland will be likely to meet this definition of steeply sloping land, but in all situations you must remember to meet all of the other requirements of the NAP Regulations including preventing the entry of fertiliser (chemical and organic) into waterways i.e. avoiding pollution.

Remember you should not attempt to operate machinery on slopes unless you are sure it is safe.

1.6.4 How do I assess the risk of spreading fertiliser on steeply sloping land?

If the land meets the definition of steeply sloping as described in section 1.6.3, the following risk assessment must be undertaken before any application of nitrogen fertiliser (including organic manures), in addition to meeting all other requirements of the NAP Regulations.

The following factors must be considered in making this risk assessment:

- type and level of fertiliser being applied;
- time to incorporation of organic manures (arable land only);
- proximity of waterways;
- soil conditions; and
- forecast weather conditions.

Additional detail about carrying out the spreading risk assessment can be found in annex A, page 56.

1.6.5 How close can I apply chemical fertiliser to waterways?

To within two metres of a waterway.

1.6.6 How close can I apply organic manure to waterways?

To within:

- 20 metres of lakes; or
- 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 of 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; or
- 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 swallowholes and collapse features).

Remember organic manures include dirty water, slurry, poultry litter, farmyard manure and other organic manure such as abattoir waste.

1.6.7 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 50 m³ per ha (4500 gallons/acre);

Solid organic manures 50 tonnes per ha (20 tons/acre).

1.6.8 How often can I apply organic manures?

A minimum of three weeks must be left between applications.

1.6.9 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, bandspreader, trailing shoe, trailing hose soil injection or soil incorporation methods.

Sludgigator type spreaders and upward facing splashplates cannot be used.

Examples of permitted methods of slurry applications.



Photo 1. Inverted splash plate



Photo 2. Trailing shoe



Photo 3. Injection system



Photo 4. Band spreader

1.7 Applying dirty water

The definition of dirty water is found on page 52 and pictures to assist in visualising where dirty water could be produced are found in Annex B, page 59.

1.7.1 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 section 1.6.2. Provision for the safe storage of dirty water should be available for periods when conditions are not suitable for land application.

1.7.2 Is there a maximum single application for dirty water?

Yes, the maximum application for dirty water is 50m³ per ha (4500 gallons/acre) in a single application.

1.7.3 How often can I apply dirty water?

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

1.7.4 How close can I apply dirty water to waterways?

The restrictions which apply to organic manure and are set out in section 1.6.6, also apply to dirty water.

1.7.5 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. However, dirty water can also be spread by irrigation.

Sludgigator type spreaders and upward facing splashplates cannot be used.

1.8 Limits on land application of organic and chemical nitrogen fertilisers

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

The amount of total nitrogen in livestock manures applied to the land under your control, including by the animals themselves, shall not exceed 170kg N per ha per year as required by the Directive. The amount of nitrogen excreted annually by various types of livestock is found in Annex C or in the NAP Guidance Workbook. The NAP Guidance Workbook is available on-line at www.dardni.gov.uk/ruralni/environment/countrysidemanagement or www.doeni.gov.uk/niea. Totalling these nitrogen excretions for the average number of livestock on a farm and dividing by agricultural area controlled gives the livestock manure nitrogen loading per ha.

In Northern Ireland approximately 90% of farms are working under this limit. Only intensive dairy, beef, pig and poultry farms tend to exceed this limit.

A ready reckoner table is found in Annex D, page 64 which indicates the approximate land area required for some enterprises.

It is important that you can demonstrate control over the area of land used in your calculation.

If you are above the 170kg N/ha/year limit, availing of a derogation (please refer to section 1.8.2 for additional information), taking additional land, exporting livestock manure or reducing stock will reduce the nitrogen loading per ha. Annex E, page 65 shows how to calculate the amount of livestock manure that could be imported or exported to meet the 170kg N/ha/year limit.

1.8.2 Can I operate above 170kg N/ha/year?

Yes. You can farm above 170kg N/ha/year to a limit of 250kg N/ha/year from grazing livestock manure, subject to your farm meeting certain key criteria. This is referred to as a derogation. Application for derogation must be made to NIEA on or before 1 March each year. Farms operating under derogation must adopt additional nutrient management and record-keeping measures to ensure that operating at a higher grazing livestock manure limit does not adversely impact on water quality. The main requirements of a derogation are that you must:

- have at least 80% land in grassland;
- apply to NIEA on or before 1 March each year;
- prepare and keep updated a fertilisation plan on farm by 1 March each year;
- prepare and submit a fertilisation account for the previous calendar year to NIEA on or before 1 March each year;
- have a farm phosphorus balance that does not exceed 10kg P/ha/yr; and
- comply with some additional restrictions on crop rotation and soil management.

More information about the NAP Derogation can be found at www.doeni.gov.uk/niea or in the NAP Derogation Guidance Booklets which are available from DARD and NIEA. Contact details may be found in Annex O on page 80. Derogation application forms are available from NIEA at www.doeni.gov.uk/niea or by telephoning 028 9262 3184. Farmers wishing to apply for a derogation must submit a completed application form to NIEA on or before 1 March each year.

1.8.3 What area of land do I use to calculate my livestock manure nitrogen loading?

The area of land used for the calculation of your livestock manure nitrogen loading is called the agricultural area.

You need to be able to demonstrate control of this area of land. Please refer to section 1.1 for additional detail.

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 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.

1.8.4 How is my livestock manure nitrogen loading calculated?

To calculate the livestock manure nitrogen loading, you should work out the total nitrogen excretions for the livestock on the farm (see Annex C) and divide by the agricultural area controlled. The steps involved are:

- For each stock type 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 the 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 1 year	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)		+300
Exported manure		- 0
		Total = 5431kg
Livestock manure nitrogen loading per ha		= 5431kg N/46ha = 118kg N/ha

A worksheet to help you make this calculation can be found in the NAP Guidance Workbook which is available online at www.dardni.gov.uk/ruralni/environment/countryside/management or www.doeni.gov.uk/niea.

Alternatively, you can access the 'Livestock Manure Nitrogen Loading Calculator' at www.dardni.gov.uk/onlineservices.

1.8.5 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 value must obtain prior approval from NIEA based on a scientific case. Contact NIEA for detail on procedures. Contact details may be found in Annex O, page 80.

1.8.6 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 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. Please note that this is outside of the scope of exemptions under the Agricultural Waste Regulations, as applied for on your SAF / IACS each year. Instead, in such cases, an exemption from waste management licensing is required from NIEA. Contact details may be found in Annex O, page 80.

Application of sewage sludge to agricultural land is regulated by the Sludge (Use in Agriculture) Regulations (N.I.) 1990. An exemption from waste management licensing is also required for the storage of most of these products (including, sewage sludge, abattoir waste and fish farm residues). The application of these manures is restricted to the grass/crop requirement for both nitrogen and phosphorus, and you must provide evidence of the nitrogen and phosphorus content. In the case of these organic manures the percentage availability stated in Annex F, page 66, must be used.

1.8.7 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.

Very few grassland farms in Northern Ireland will be affected by the maximum chemical 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 section 1.8.4), 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 set out below. All other livestock farms must use the 'other livestock farm' nitrogen limit set out on page 26.

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 NAP Regulations is:

	Maximum kg N/ha
Dairy farms	272 (8 ¹ / ₄ bags/acre) *
Other livestock farms	222 (6 ³ / ₄ bags/acre) *

* 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.

You will find worksheets to help you check compliance in the NAP Guidance Workbook, which is available on-line at www.dardni.gov.uk/ruralni/environment/countrysidemanagement or www.doeni.gov.uk/niea. Nitrogen limits are calculated by dividing the amount of nitrogen applied to grassland by the area of grassland. You can use the 'N Max for Grassland Calculator' at www.dardni.gov.uk/onlineservices to calculate your farms use of nitrogen on grassland.

Example:

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

The maximum kg N/ha limits for grassland assumes that slurry contributes 68kg N/ha. 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 lowly 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.

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

Average nitrogen limits for crop area

For arable, forage and horticultural crops the maximum amount of nitrogen fertiliser, including organic manures, that can be applied per hectare must be in accordance with crop requirement, as assessed using the latest edition of the DEFRA fertiliser technical standards (RB209).

The nitrogen fertiliser requirement for crops is influenced by the previous crop, its management, the amount of rainfall and soil type. The level of residual nitrogen within the soil and available for the next crop is called the Soil Nitrogen Supply (SNS) and is expressed as an index. Using the appropriate SNS index for crop areas with the same cropping history and soil type, the maximum nitrogen application for crops other than grass can be calculated using RB209.

For arable and forage crops, in situations where the soil type is uncertain, the guidance found in Annex G may be used to assess the maximum crop nitrogen requirement. This guidance has been derived from RB209 and takes into account the most common soil types in Northern Ireland.

Remember if organic manures, including livestock manures, are to be applied to the crop area the nitrogen available from these manures (see Annex F, page 66) must be subtracted from the maximum nitrogen application rate.

A worksheet to help you calculate the amount of nitrogen applied to crops other than grass can be found in the NAP Guidance Workbook which is available on-line at www.dardni.gov.uk/ruralni/environment/countrysidemanagement and www.doeni.gov.uk/nia.

Alternatively you can use the 'Crop Nutrient Recommendation Calculator' at www.dardni.gov.uk/onlineservices to calculate nitrogen & phosphorus for your crops.

1.8.9 Are there limits on the land application of chemical phosphorus fertiliser?

Yes. Chemical phosphorus fertiliser must not be applied unless there is a crop 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.

The Phosphorus Regulations are not a verifiable standard under Cross-Compliance, but compliance with the Regulations is a legal requirement.

1.8.10 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 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. Your local DARD office may be able to supply the equipment needed.

Testing 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.

1.8.11 How do I determine any crop requirement for phosphorus?

The soil test establishes the phosphorus index of the soil. Using this index, crop requirement for phosphorus for some common crops in Northern Ireland, can be found in Annex H page 72.

A worksheet to help you calculate the crop phosphorus requirement can be found in the NAP Guidance Workbook which is available from online at www.dardni.gov.uk/ruralni/environment/countrysidemanagement or www.doeni.gov.uk/niea.

Alternatively you can use the 'Crop Nutrient Recommendation Calculator' at www.dardni.gov.uk/onlineservices to calculate nitrogen & phosphorus for your crops.

1.8.12 How do I account for applications of organic manures?

If organic manures, including livestock manure, 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 H, page 72. The phosphorus (P_2O_5) in manures must be taken as 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.

1.8.13 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. If any other organic manures, such as sewage sludge or abattoir waste are imported you must ensure that applications adhere to limits as outlined in section 1.8.6.

1.9 Storing livestock manure and silage effluent

1.9.1 What storage do I require on my farm?

You must provide adequate storage to cover the closed spreading period set out in section 1.5.1. You must also ensure that your storage is adequate to cover periods of adverse weather and soil conditions outside of the closed spreading period as set out in section 1.6.2.

The minimum storage requirement is 22 weeks for livestock other than pigs and poultry (see section 1.10).

When calculating your storage capacity remember to account for:

- Slurry produced by livestock.
- Rain on yards where slurry is produced and rain entering open tanks.
- Dirty water collected with slurry.
- Separated solids from cattle and sheep slurry.
- Dairy washings collected with slurry.
- Slurry exported to processing.

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

The section 1.14 provides details about deductions and exceptions relating to the calculation of the storage requirement.

1.9.2 If I require new slurry tanks/middens/silage effluent collection facilities 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) 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 NIEA using the contact details provided in Annex O, page 80.

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 NAP Regulations. 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.

You may require planning permission. Any development must comply with certain requirements set out in the relevant legislation, Part 6 of Schedule 1 to the Planning (General Development Order) (NI) 1993, Agricultural Buildings and Operations. For more information contact your local Planning Office. Additional information can be found on-line at www.planningni.gov.uk.

1.10 Storing pig and poultry manure

1.10.1 What storage capacity must a pig and/or poultry farm provide?

A farm with more than 10 breeding sow places or 150 finishing pig places, or a farm with more than 500 poultry places must provide a minimum of 26 weeks storage capacity. 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.

1.10.2 What storage capacity 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, for example dairying enterprises or beef enterprises, on the farm.

1.11 Storing farmyard manure

1.11.1 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 it is to be applied, but for no longer than 180 days. From 1 January 2013, FYM field heaps are still permitted, but for no longer than 120 days.

It must not be stored in the same location of the field year after year and must not be stored on land that is waterlogged, flooded or likely to flood.

1.11.2 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;
- 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;
- 50 metres of a borehole, spring or well;
- 250 metres of a borehole used for a public water supply; or
- 50 metres of exposed cavernous or karstified limestone features (such as swallowholes and collapse features).

1.12 Storing poultry litter

1.12.1 Where can I store poultry litter?

Poultry litter may be stored in a midden prior to field storage or land application, provided that adequate collection facilities are in place to capture all run-off. Run-off from middens is classified as slurry under the NAP Regulations and must be stored and applied to land accordingly. If the run-off collection facilities are new or have been substantially enlarged or substantially reconstructed since 1 December 2003, they must comply with the British Standards specified in the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations (NI) 2003 (SSAFO Regulations).

Poultry litter can be stored in temporary field heaps in accordance with this guidance until 30 September 2011.

The Departments are working with the poultry industry to determine if there is any water pollution risk from the current poultry litter field heap rules, and to evaluate a range of alternative measures. If these trials demonstrate a risk of water pollution from the current rules, then new measures will be introduced for the period 1 October 2011 until 31 December 2014. However, if the trials demonstrate a risk of water pollution from alternative field storage measures, field storage of poultry litter will be discontinued. Further guidance will be issued to farmers in relation to any changes of the temporary field storage rules. Further information will be made available at www.dardni.gov.uk or www.doeni.gov.uk/niea.

The following conditions must be met by all poultry litter field heaps:

- a field heap containing poultry litter must be compact and covered with an impermeable membrane within 24 hours of placement in the field;
- poultry litter must be spread at the time of next application on the field in which it is stored. The storage period must be no longer than 180 days;
- poultry litter heaps must not be stored in the same location within a field year after year; and
- 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).

It is essential that storage of poultry litter is properly managed and located to prevent water pollution. Check all field heaps frequently to ensure that the impermeable cover remains in place completely covering the heap and that there are no signs of run-off.

The quantity of poultry litter stored in field heaps and middens can be off-set against the storage requirement.

Additional information can be found on-line at www.dardni.gov.uk/ruralni/environment/countrysidemanagement

1.13 Storage of other manures prior to field application

An exemption from waste management licensing is required for the storage of most other manure products (including sewage sludge, abattoir waste and fish farm residues) prior to field application. An application for exemption must be made to NIEA. Contact details may be found in Annex O, page 80.

1.14 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.

1.14.1 Can manure produced from animals on bedded accommodation be excluded when calculating livestock manure storage capacity?

The quantity of slurry produced from 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 I, page 73;
- 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.

1.14.2 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 spreading period for slurry and the solid fraction cannot be applied during the closed spreading period for farmyard manure. The solid fraction in the case of cattle slurry may be stored as described in section 1.11.

1.14.3 Can poultry litter stored in a midden or field heap be excluded when calculating livestock manure storage capacity?

Yes. The quantity of poultry litter produced which is stored in a midden or field heap (as described in section 1.12.1) does not need to be taken into account when calculating a farm's slurry storage capacity provided there are adequate effluent collection and storage facilities for the duration of the closed period.

1.14.4 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 J, page 74; 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.

1.14.5 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 section 1.14.2, 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 K, page 76 or online at www.dardni.gov.uk/ruralni/environment/countrysidemangement and www.doeni.gov.uk/niea

1.14.6 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 a livestock manure nitrogen loading per hectare. It 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.

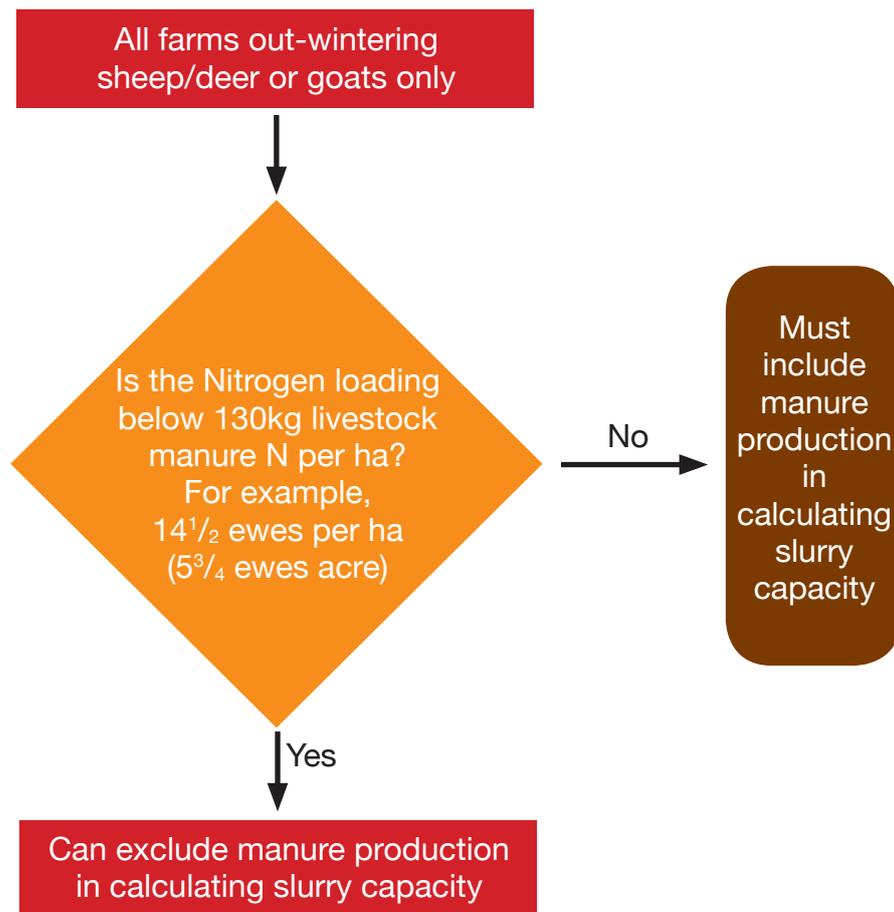
1.14.7 What stocking rates must be adhered to, to exclude manure from the livestock manure storage capacity calculations?

The limits vary according to the livestock type to be outwintered.

Two factors must be taken into account.

1. Annual livestock manure nitrogen loading
2. Livestock manure limit during the out-wintering period

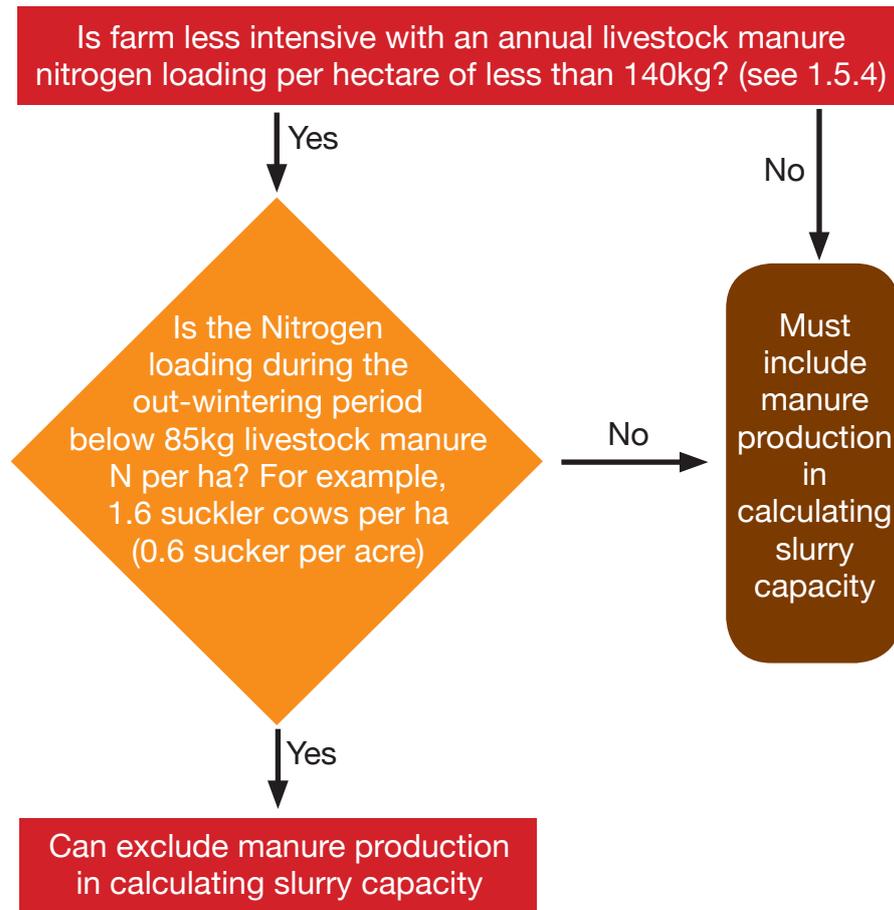
(a) Farms wishing to exclude manure from the storage calculation from out-wintering sheep/deer and goats only



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

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

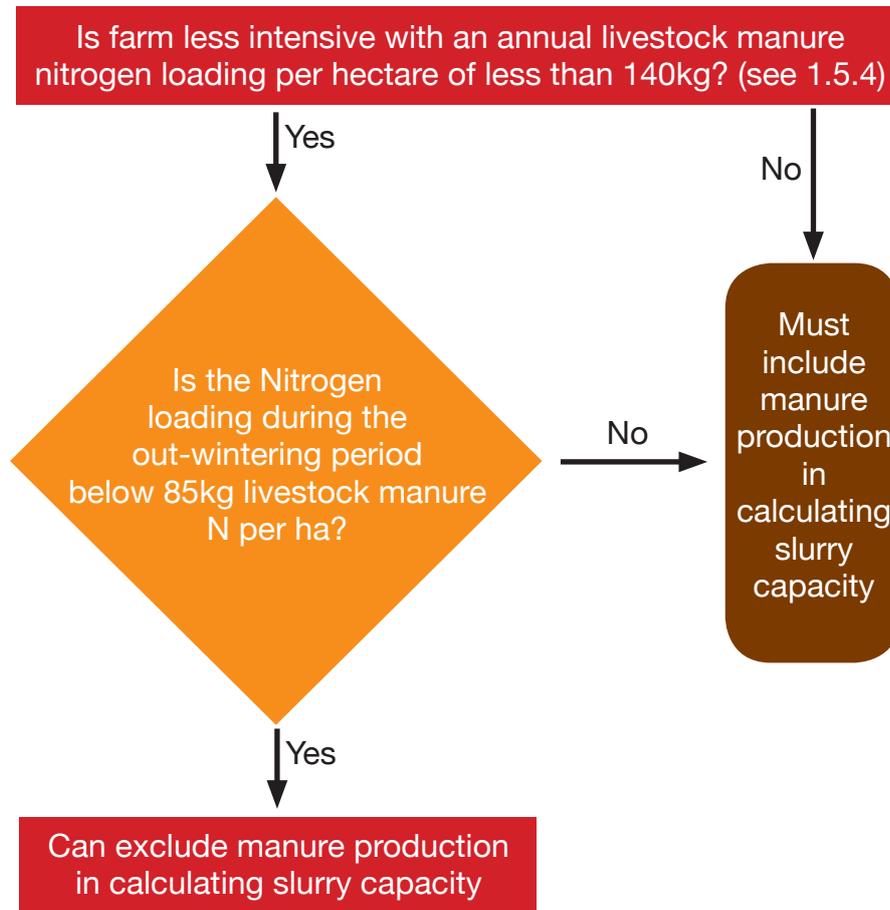
(b) Farms wishing to exclude manure produced from out-wintered cattle from storage calculation (excluding dairy cows)



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 under 1 year	0		
Ewes	0		
Lambs under 1 year	0		
Total			2700
Nitrogen loading 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 the storage calculation and less than 50% of livestock manure nitrogen during the out-wintered period comes from sheep

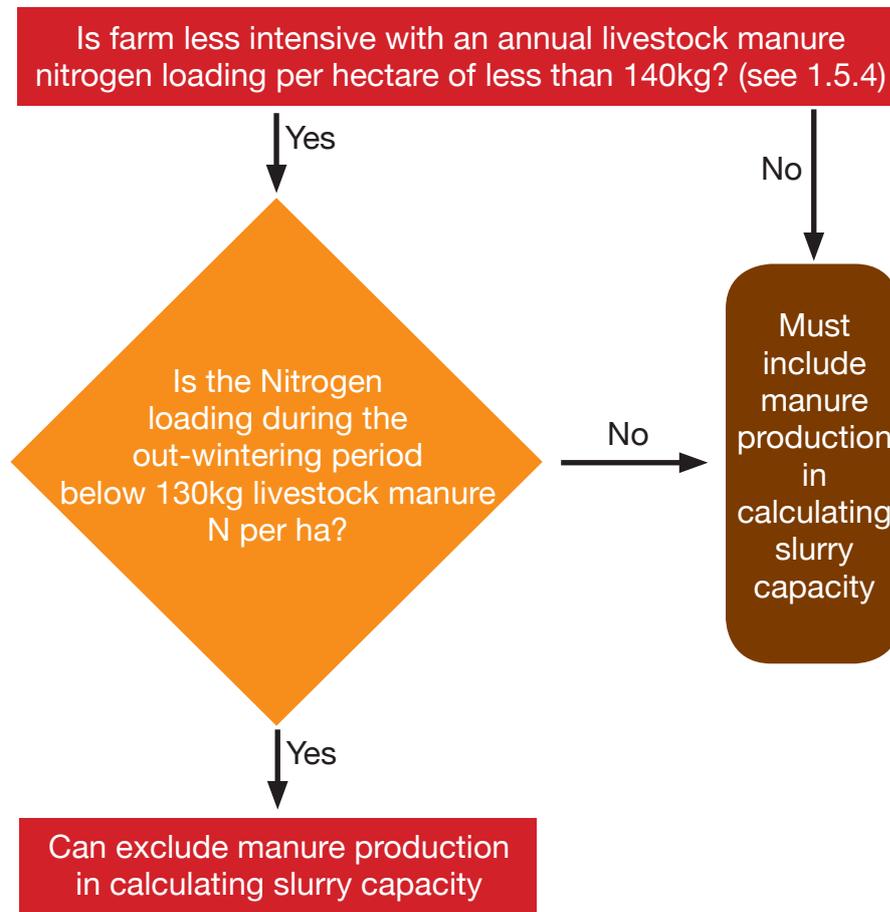


Example: Out-wintering 30 suckler cows and 150 ewes on 40ha of grassland

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

* Sheep nitrogen excretion is 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 under 1 year	0		
Ewes	150	9	1350*
Lambs under 1 year	0		
Total			1890
Nitrogen loading 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

1.14.8 Are there any restrictions on a farm out-wintering within the 130kg and 85kg grassland nitrogen loading limits?

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.

Copies of the DARD Cross-Compliance Verifiable Standards Booklet can be obtained in your local DARD office or online at www.dardni.gov.uk/ruralni/environment/countrysidemanagement.

1.14.9 How do I calculate my livestock manure storage capacity?

A worksheet to help you calculate the livestock manure storage capacity can be found in the NAP Guidance Workbook which is available on-line at www.dardni.gov.uk/ruralni/environment/countrysidemanagement and www.doeni.gov.uk/niea.

Alternatively, you can access the 'Livestock Manure Nitrogen Storage Calculator' at www.dardni.gov.uk/onlineservices.

1.15 Cover in winter

1.15.1 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;
- 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.

1.15.2 What about late crops?

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

1.15.3 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.

1.16 Record keeping

1.16.1 What period do I have to keep records for?

Records must be kept for each calendar year, from 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 2010 calendar year records must be prepared by 30 June 2011.

Remember to refer to the previous NAP and Phosphorus Guidance Booklet, published in 2007, in relation to keeping records relating to the previous NAP period (2007 to 2010).

1.16.2 What records do I have to keep?

The information and records required are listed on page 41. The inspection process will calculate and ascertain whether compliance has been achieved, using the recommended records sources and the technical content and format contained within this guidance booklet.

For example, the requirements for record keeping of many farmers will be met if they provide a copy of their SAF / 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 NIEA to determine whether compliance has been achieved.

The level of records required will be dictated by the circumstances found on farms. Table 4 on page 41 outlines what records are required and recommends various sources where this information can be found.

1.16.3 Do I have to calculate whether my farm complies with the various limits required by the Regulations?

It is not a requirement to calculate the various values for your farm such as the livestock manure nitrogen loading, chemical nitrogen and chemical phosphorus application rates and the number of weeks storage capacity on farm. However if you do not complete the calculations, you may be unaware of your position and may be in breach of the Regulations.

Table 4. Record requirements and recommended record sources

Mandatory Record Requirements	Recommended record sources
<p>Agricultural area including size and location of each field</p> <p>Cropping regimes and their individual areas</p>	<ul style="list-style-type: none"> • Copy of relevant SAF /IACS form. In the absence of an SAF/IACS form a DARD farm map indicating agricultural area and size and location of each field. • If growing crops, note the type of crops, for example, grass, spring barley, winter wheat and record on SAF / IACS form or DARD farm map. • Provide evidence of control of the land if you are not owner, for example, SFP claimant or written agreement. • Provide evidence of the rights of use and area of common land if applicable.
<p>Numbers of livestock kept on the farm, their species and type, and length of time kept on farm</p>	<ul style="list-style-type: none"> • Cattle - DARD Herd Register for Bovine Animals • Sheep - DARD Flock Register • Pigs - DARD Herd Register for Pigs • Poultry - Company audit records <p>Welfare Legislation records</p> <p>Quality assurance records</p> <p>Egg marketing legislation records</p> <p>or</p> <ul style="list-style-type: none"> • APHIS online accessed at www.dardni.gov.uk/ruralni/environment/countrysidemangement. <p>or</p> <ul style="list-style-type: none"> • Enterprise management software. <p>or</p> <ul style="list-style-type: none"> • Numbers recorded in the NAP Guidance Workbook, which is available on-line at www.dardni.gov.uk/ruralni/environment/countrysidemangement or www.doeni.gov.uk/niea <p>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.</p>
<p>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</p>	<ul style="list-style-type: none"> • Recorded as per example which can be found in Annex L, page 77. • Nitrogen 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.

Mandatory Record Requirements	Recommended record sources
Fertiliser details (As per example in Annex M, page 78)	<ul style="list-style-type: none"> • The tonnage and nitrogen and phosphorus content of all fertiliser stocks on 1 January. • Dated fertiliser invoices or receipts, or a list of purchases showing certified nitrogen and phosphorus content of chemical fertiliser and tonnage bought/sold. • The tonnage and nitrogen and phosphorus content of fertiliser imported in and exported off the farm. • The tonnage and nitrogen and phosphorus content of all fertiliser stocks on 31 December of the same calendar year.
Livestock manure capacity	<ul style="list-style-type: none"> • On farm confirmation of storage capacity for example, dimensions of tanks, e.g. 25m by 4m by 1.8m and 10m by 8m by 1.8m. • Numbers and length of time livestock housed during winter. • Numbers, type and length of time livestock out-wintered. • Note on SAF / IACS form or DARD farm map area and location of land used to out-winter. • Numbers, type and length of time livestock bedded • Details of poultry litter which is stored in a midden. • Note amount of cattle slurry separated. • Remember to include slurry collected from open yards and an allowance for silage effluent in your calculations. • Valid contractual agreements with processing facilities or evidence of access to an approved treatment or recovery outlet (Annex K, page 76). • An approved FNMS application, if the information still reflects the current livestock storage on the farm.
Record Requirements	Recommended record sources if growing crops other than grass
Soil nitrogen supply (SNS) index for cropping areas other than grassland	<ul style="list-style-type: none"> • Previous crop grown if fertilising crops other than grass. • If known, soil type. If soil type is unknown the tables in Annex G may be used to establish SNS index.
	Recommended record sources if applying chemical phosphorus fertiliser
Size and location of each field to which chemical phosphorus fertiliser applied	<ul style="list-style-type: none"> • Copy of relevant SAF / IACS form. In the absence of an IACS form, an up to date DARD farm map indicating size and location of each field to which chemical phosphorus fertiliser has been applied.

Mandatory Record Requirements	Recommended record sources
Type of crop sown	<ul style="list-style-type: none"> Type and date of crops grown in above fields noted on the SAF / IACS form or DARD farm map.
Results of phosphorus soil test	<ul style="list-style-type: none"> 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.
Phosphorus fertiliser details	<ul style="list-style-type: none"> Type and quantity of all fertilisers containing phosphorus (chemical and organic including livestock manures) applied to the field to which chemical phosphorus fertiliser has been applied. Date of all of the above where applied and phosphorus content of all of the above.
Statement of foreseeable phosphorus requirements of the crop	<ul style="list-style-type: none"> Soil phosphorus index for the crop according to fertiliser technical standards. Chemical phosphorus recommendation for the crop from fertiliser technical standards taking all of the above factors into account.

Please note that these are only recommended record sources. If you have another method of recording the required information which will allow NIEA to make an assessment of your farm business position against the various measures then this is satisfactory.

1.16.4 CAFRE farm nutrient management calculators

If you need help with the NAP measures on nutrient limits, storage requirements and record keeping, then log onto www.dardni.gov.uk/ruralni/environment/countrysidemanagement and use the Farm Nutrient Management Calculators which are designed to help you meet the requirements of the NAP.

There are five Farm Nutrient Management Calculators which are easy to use, available 24 hours per day, secure and confidential.

Livestock manure nitrogen loading calculator

Calculate the nitrogen loading for your farm. Check if you are below the 170kg N/ha/year limit or if operating under a derogation the 250kg N/ha/year limit.

Livestock manure storage calculator

Calculate the weekly slurry, dirty water, manure production and current storage capacity for your farm. Check if you have the required 22 or 26 weeks storage or how much additional storage is needed.

Livestock numbers are required for the above two calculators. An accurate record of cattle type and numbers kept each year since 2007 can be obtained using the 'Nitrate Animal Count' function on APHIS Online.

Crop nutrient recommendation calculator

This programme will help you to comply with nutrient limit requirements and draw up a nutrient management plan (NMP) for your farm:

- Determine the N, P₂O₅ and K₂O required by crops;
- Calculate the amount of nutrients supplied by organic manures;
- Select the correct chemical fertiliser and application rate to ensure nutrients are optimised;
- Retain information required for record keeping.

Although not a requirement of the Regulations this calculator will also provide information in relation to K₂O requirements. Importantly it can be used to help to optimise application rates and so reduce chemical fertiliser costs.

Phosphorus balance calculator

Farms operating under a derogation must not exceed a phosphorus balance of 10kg/ha/year. Calculate the phosphorus balance for your farm and help manage phosphorus inputs and outputs to meet the limit.

N max for grassland calculator

Check that nitrogen applications to the whole grassland area on the farm do not exceed the NAP limits.

Where can I find the farm nutrient management calculators?

Step 1: Go to RuralNI website at www.ruralni.gov.uk

Step 2: If you have not yet registered, click 'New user Sign-up now' and follow the on-screen instructions. (Remember to select APHIS Online if you wish to use this service).

Step 3: Once registered, log in and select Farm Nutrient Management Calculators.

Step 4: Select the Farm Nutrient Management Calculator you wish to use.

Training

CAFRE offers the following training courses to help farmers understand these regulations

1. Nitrates Information Training
General information on nitrates and record keeping.
2. Nitrates Derogation Training
Information on how to meet the additional requirements of the Nitrates derogation.
3. Nutrient Management Planning
A further detailed course on matching nutrient inputs to crop requirement for economic crop production, the long term fertility of the soil and to comply with the nitrates regulations.

To register your interest for any of these courses please call CAFRE at 0845 30 44 501.

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 Northern Ireland Environment Agency (NIEA), an agency within the Department of the Environment. Their officers carry photographic identification (a warrant card) that authorises them to carry out inspections. NIEA 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 NIEA will seek to protect and conserve the environment 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?

The Nitrates Directive is one of the Statutory Management Requirements under Cross Compliance, with NIEA being the competent control authority to carry out these inspections. The Department must also review and report to the European Commission on the effectiveness of the NAP Regulations, including compliance. NIEA will carry out an environmental risk assessment to identify a list of farmers who will be visited under Cross-Compliance. At least 1% (3% if operating under an approved derogation) of farms claiming direct aid payment, including Single Farm Payment, must be inspected each year, and this percentage may be increased depending on the extent of non-compliance. In addition, NIEA must follow up on any breaches of the NAP Regulations that they witness or that are reported to them by other people.

2.3 Will I be given notification of an inspection?

There is no requirement for NIEA to provide advance notice of a planned inspection. However, provided that the purpose of the inspection is not jeopardised, NIEA will contact you to confirm the date and time of your inspection. It is a legal requirement to allow an inspection to take place. Failure to allow an inspection to take place may be notified to DARD and as a result you may no longer be considered eligible to receive direct agricultural support. If NIEA are responding to a pollution referral, they may arrive on the farm unannounced.

2.4 What about bio-security on my farm?

All NIEA staff carrying out farm inspections will have equipment to disinfect their vehicle and footwear prior to entering and leaving your farm. NIEA 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 NIEA protocols, staff will comply with your requirements.

2.5 What will happen during an inspection?

There are four aspects to the farm inspection:

1. Inspection of farm records

You must have your records available for inspection (see section 1.16, page 40 for the records that are needed). Records must be kept from 1 January 2007. 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 2010 to 31 December 2010 must be ready for inspection by 30 June 2011. You must retain the records for the last five calendar years or from 1 January 2007 whichever is the shorter.

2. Land inspection

NIEA staff will give you the option to accompany them during their inspection of your land and farm facilities. Photographs will be taken as a record of the inspection and in some cases samples may be taken.

NIEA staff will in particular wish to inspect areas of your land which appear to be most vulnerable to pollution. This would, for example, include fields adjacent to waterways, boreholes, wells or springs.

3. Inspection of farm facilities such as slurry stores, yards and middens

Your farm facilities will also be inspected. NIEA staff will check yard areas and middens to ensure that slurry and dirty water is being appropriately contained and not giving rise to pollution. The integrity of your storage tanks for slurry and silage effluent will also be checked and the capacity of your slurry stores will be assessed.

4. Completion of the report form

A report form will be completed during the visit. You will be provided with informal feedback at the end of the visit. Any areas of concern or non-compliance will be highlighted and any remedial action will be agreed with you. Where there has been non-compliance NIEA will write to you to confirm the findings of the inspection and any areas of improvement that may be required. If NIEA has asked you to carry out remedial works and these works have not been completed within the given timescale, there may be additional non-compliances.

2.6 What happens after an inspection visit?

If your farm was fully compliant, you will not receive any further correspondence from NIEA regarding the inspection. Where there has been non-compliance NIEA will write to you to confirm the findings of the inspection and any areas of improvement that may be required. NIEA will endeavour to provide this letter within 28 days of completion of the inspection (which will include the time period for any verification checks) and no later than 3 months after completion of the inspection.

2.7 What happens if my farm is non-compliant?

NIEA will seek to work co-operatively with farmers to secure improved practice on the farm. Unfortunately enforcement action will need to be taken in some cases to ensure compliance. Any enforcement action will be in accordance with NIEA's Enforcement and Prosecution Policy for Environmental Protection which can be found on www.doeni.gov.uk/niea or you can contact NIEA. See Annex O, page 80.

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

In some cases a statutory notice may be served. This notice will detail the action required within a stated timescale of no less than 28 days. NIEA 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

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

- fail to comply with the requirements of the Regulations;
- compile and provide false or misleading records; or
- fail to comply with a statutory notice as described above.

It is also an offence for any person to obstruct, refuse or fail to assist NIEA staff or staff carrying out duties on behalf of NIEA in relation to the inspection and enforcement of the Regulations.

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 DARD who are responsible for applying any reductions in payments in respect of certain direct agricultural support measures (including Single Farm Payment).

2.9 What has been found on inspections to date?

Compliance with many measures has been very good and the majority of farms inspected from 2007 to 2009 have fully complied with the measures. There are, however, some key areas of non-compliance including record keeping, storage of FYM, applications near waterways and general pollution arising from run-off from yards. Other breaches such as applications on waterlogged ground or using inappropriate techniques, failing to cover poultry litter field heaps, leaking slurry stores and exceeding the livestock manure limit

were also detected. NIEA will continue to monitor these areas and work with DARD and stakeholders to raise awareness of these issues with the aim to improve practice.

2.10 Exceptional circumstances

Under certain exceptional circumstances, beyond the control and not foreseeable by the farmer, a defence may be made against some of these offences. The measures to which this defence could be applied are the entry of fertiliser into waterways or groundwater, the closed spreading period for organic manures, spreading organic manures in adverse weather conditions and on steeply sloping ground, limits on the quantity and time between solid organic manure, slurry and dirty water applications and the 170 kg N/ha/year livestock manure limit. In addition, on derogated farms this defence could be applied to the 250 kg N/ha/year livestock manure limit and the 10 kg P/ha/year limit. It should be emphasised that the onus will be on the farmer to take all reasonable precautions to manage these situations.

NIEA will assess these situations on a case-by-case basis, but examples could include extreme weather events such as regional floods or epizootics such as foot and mouth disease.

2.11 Can I appeal any of these decisions?

There are two forms of appeal. The first is in relation to notices and the second relates to a reduction in farm subsidy.

1. Appeals against notices

If you are served with a notice under the Regulations 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, at their own expense before making an appeal.

The Water Appeals Commission can be contacted at:

Park House
87-91 Great Victoria Street
Belfast
BT2 7AG

Tel: 028 9024 4710

Fax: 028 9031 2536

E-mail: info@pacni.gov.uk

2. Appeals against a reduction of subsidy

If you are notified by DARD of a decision to reduce payments in respect of certain direct agricultural support measures (including Single Farm Payment) as a consequence of breaches of the Cross-Compliance requirements, you have a right to appeal.

Details of the appeals procedure will be sent to you with the DARD letter advising you of the breach and subsequent penalty. An information leaflet on the Single Farm Payment appeals procedure and an application form is 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

www.dardni.gov.uk/grants-and-funding/single-farm-payment-scheme

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

If NIEA have made a mistake they will apologise and try to put things right. In addition NIEA has set up a complaints procedure to tell you about your right to complain, how to make a complaint and how it will be dealt with. This can be found on www.doeni.gov.uk/niea or by contacting NIEA at the address provided in Annex O, page 80.

2.13 Contacting NIEA

If you need further advice on the NAP and Phosphorus Regulations during office hours please telephone: 028 9262 3280.

In an emergency, please contact the NIEA Water Pollution Hotline: 0800 80 70 60. See Annex O, page 80.

Key Definitions

Adequate effluent collection facilities means effluent collection facilities that are maintained free of structural defect and managed to prevent run-off or seepage, directly or indirectly, into a waterway or underground strata. Where applicable, the facilities must comply with the Control of Pollution (Silage, Slurry and Agricultural Fuel Oil) Regulations (Northern Ireland) 2003.

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.

Appeals Commission means the Water Appeals Commission for Northern Ireland. For contact details see page 49.

Appropriate person means:

- (a) the controller;
- (b) any person permitted by the controller to carry out, on their behalf, any activity described in the NAP Regulations;
- (c) the owner of any storage facility used for the storage of livestock manure and silage effluent; and
- (d) any person using such storage facilities for the storage of livestock manure and silage effluent.

Available nitrogen means forms of nitrogen that can be taken up by a crop immediately or within a short period.

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

Code of Good Agricultural Practice means the “Code of Good Agricultural Practice for the Prevention of Pollution of Water, Air and Soil” published by the Department of Agriculture and Rural Development (as may from time to time be reissued).

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 described in the fertiliser technical standards and in regulations 8 and 9 of the NAP Regulations.

Derogated holding means a holding over which a derogation has been granted.

Derogation means a derogation from the limit of livestock manure that can be applied to land each year as provided for in paragraph 2(b) of Annex III of the Directive granted by the Commission Decision 2011/128/EU (extending Commission Decision 2007/863/EC) and approved by the Department which is valid for one calendar year.

Derogation application means an application for derogation submitted by the controller using a form provided by the Department.

Dirty water means water contaminated by organic manure, urine, effluent, milk and cleaning materials with a Biochemical Oxygen Demand (BOD) no greater than 2,000 mg/litre and total nitrogen and dry matter contents as set out in Table 2 of Part 1 of the Schedule of the NAP Regulations.

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.

Fertilisation account means an account prepared in accordance with the NAP Regulations. Farms operating under a derogation must prepare and submit a fertilisation account for the previous calendar year to NIEA on or before 1 March each year. Further information on how to prepare and submit a fertilisation account can be found in the NAP Derogation Guidance Booklet.

Fertilisation plan means a plan prepared in accordance with the NAP Regulations. Farms operating under a derogation must prepare and keep updated a fertilisation plan on farm by 1 March each year. Further information on how to prepare and update a fertilisation plan can be found in the NAP Derogation Guidance Booklet.

Fertiliser technical standards means the 'DEFRA Fertiliser Manual (RB209) 8th Edition' (as may from time to time be reissued) and any supplementary guidance, and any other publication by DEFRA or the Department of Environment and the Department of Agriculture and Rural Development substituting the standards set out in RB209 and any supplementary guidance.

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

Grassland holding means a holding where 80% or more of the agricultural area available for manure application is cultivated with grass.

Grazing livestock means cattle (with the exclusion of veal calves), sheep, deer, goats and horses.

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.

Midden means a storage facility with an impermeable base for solid, stackable organic manure.

NAP Regulations means the Nitrate Action Programme Regulations (Northern Ireland) 2010.

Nitrogen fertiliser means any substance, including chemical fertiliser, containing a nitrogen compound 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.

Phosphorus fertiliser means any substance, including chemical fertiliser, containing a phosphorus compound utilised on land to enhance growth of vegetation.

Phosphorus Regulations means the Phosphorus (Use in Agriculture) Regulations (Northern Ireland) 2006.

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 Tables 1, 2 or 3 of Part 1 of the Schedule of the NAP Regulations has no worse effect on the environment than that caused by using the aforementioned values.

Slurry means:

- (a) excreta produced by livestock whilst in a yard or building;
- (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 Regulations and from any supplementary guidance.

Steeply sloping land means land which has an average incline of 20% or more in the case of grassland or 15% or more in the case of other land.

Total nitrogen means the sum of all nitrogen forms including nitrate, nitrite, ammonia and organic nitrogen.

Underground strata has the same meaning as in Article 2(2) of the Water (Northern Ireland) Order, 1999. That is, strata underlying 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.

Waste Regulations means the Waste Management Licensing Regulations (Northern Ireland) (2003).

Waterlogged means soil where water appears on the surface of the land when pressure is added.

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
gal	Gallons
ha	Hectare
IACS	Integrated Administrative Control System
m	Metre
m³	Metre cubed
N	Nitrogen
NAP	Nitrates Action Programme
NI	Northern Ireland
NIEA	Northern Ireland Environment Agency
P	Phosphorus
SAF	Single Application Form
SFP	Single Farm Payment
SNS	Soil Nitrogen Supply
SSAFO	Slurry, Silage and Agricultural Fuel Oil Regulations
t	Tonne

Annex A - The risk assessment to be completed if planning to spread fertiliser on steeply sloping land.

If application of organic manure (including livestock manure) or chemical fertiliser to steeply sloping land (as defined in Section 1.6.3) is proposed, this risk assessment must be undertaken in addition to meeting all standard requirements of the Nitrates Action Programme Regulations (Northern Ireland) 2010. The following factors must be considered in making this risk assessment:-

- Type and level of fertiliser being applied. Particular care is needed in application of organic manures to steeply sloping land. High rates of application e.g. in excess of 25m³ of slurry per hectare (2,250 gallons/acre) represents high risk, moderate rates of application e.g. 15-25m³ of slurry per hectare (1,350 gallons/acre - 2,250 gallons/acre) represents moderate risk and low rates of application <15 m³ of slurry per ha (1,350 gallons/acre) represent low risk.
- Time to incorporation of organic manures (arable land only). The time interval between application and incorporation of organic manures should be determined. For solid organic manures, it should be considered high risk if there will be more than 5 days to incorporation, moderate risk if 4-5 days to incorporation and low risk if less than 3 days to incorporation. In the case of slurry, the time interval between application and incorporation should be assessed as high risk if there will be more than 48 hours to incorporation, moderate risk if 12-48 hours to incorporation and low risk if less than 12 hours to incorporation.
- Proximity of waterway. The distance from the area where spreading is planned to the nearest waterway at the bottom of the slope should be assessed. For organic manures, high risk is defined as less than 20m from a waterway other than a lake, moderate risk is 20-30m and low risk is more than 30m. In the case of lakes, for organic manures, high risk is defined as less than 30m from a lake, moderate risk is 30-40m and low risk is more than 40m. For chemical fertilisers, high risk is less than 5 m from any waterway, moderate risk is 5-10 m and low risk is more than 10 m).
- Soil conditions. Degree of soil wetness should be assessed. Very wet, compacted soil is assessed as high risk, moderate risk applies to wet, poached soils and low risk applies to dry, firm, trafficable soils.
- Forecast weather conditions. The Met Office is the UK's National Weather Service and provides forecasts for up to 5 days, at both a regional and local level. This information is available to the public through the internet (<http://www.metoffice.gov.uk/>), local press and media. Using Met Office information, forecast weather conditions should be assessed. Heavy rain (more than 20 mm) forecast within 48 hours is assessed as high risk, moderate rainfall (10-20 mm) within 48 hours is moderate risk and low rainfall (0-10 mm) within 48 hours is low risk.

Using the table below access if a risk exists under each of the categories.

Table 5 Risk assessment to be completed if spreading fertiliser on steeply sloping land

		Liquid Organic manures	Solid Organic manures	Chemical nitrogen Fertiliser
Distance from spreading area to waterway other than lake	High	less than 20m	less than 20m	less than 5m
	Medium	20-30m	20-30m	5-10m
	Low	greater than 30m	greater than 30m	greater than 10m
Distance from spreading area to lake	High	less than 30m	less than 30m	less than 5m
	Medium	30-40m	30-40m	5-10m
	Low	greater than 40m	greater than 40m	greater than 10m
Level of fertiliser applied	High	more than 25m ³ /ha	more than 25 tonnes/ha	greater than 120kg/ N/ha
	Medium	15-25m ³ /ha	15-25 tonnes/ha	80-120 kg/ N/ha
	Low	less than 15m ³ /ha	less than 15 tonnes/ha	less than 80kg/ N/ha
Soil conditions	High	very wet, compacted soil	very wet, compacted soil	very wet, compacted soil
	Medium	wet, poached soil	wet, poached soil	wet, poached soil
	Low	dry, firm trafficable soil	dry, firm trafficable soil	dry, firm trafficable soil
Forecast weather conditions for next 48 hours	High	heavy rainfall (more than 20 mm)	heavy rainfall (more than 20 mm)	heavy rainfall (more than 20 mm)
	Medium	moderate rainfall (10-20 mm)	moderate rainfall (10-20 mm)	moderate rainfall (10-20 mm)
	Low	low rainfall (0-10 mm)	low rainfall (0-10 mm)	low rainfall (0-10 mm)
Arable land only - time to incorporation	High	more than 48hrs	more than 5 days	n/a
	Medium	12-48hrs	3-5 days	n/a
	Low	less than 12 hrs	less than 3 days	n/a

As outlined in table 6 below, if one or more of the categories specified above is assessed as “high risk”, application of chemical and/or organic fertilisers is prohibited. Similarly, if two or more of the categories specified above are assessed as “medium risk”, application of chemical and/or organic fertilisers is prohibited.

Table 6 Risk assessment determination

Level of risk		Is spreading of chemical and/or organic fertilisers allowed?
High risk	One or more of the categories	No
Medium risk	Two or more of the categories	No
	One category	Yes
Low risk	One or more of the categories	Yes

Annex B – Run-off from yards and silos.

Yards

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



Photo 5: Run-off from a frequently used collecting yard is slurry.



Photo 6: Run-off from a frequently used roaming yard is slurry.

Silos

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



Photo 7: Run-off from an empty and cleaned silo would be clean water.



Photo 8: 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.



Photo 9: The removal of slurry from yard areas will reduce the requirement to store slurry.

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.



Photo 10: Run-off from a midden is slurry.



Photo 11: Yard producing clean water.

Annex C - Nitrogen excretion rates for livestock.

Table 7. Nitrogen excretion rates for livestock

Livestock Type		Nitrogen produced / head / year (kg N)
Cattle		
Dairy cows		91
Dairy heifer (over 2 years)		54
Dairy heifer (1-2 years)		47
Suckler cows		54
Breeding bull		54
Cattle (over 2 years)		54
Cattle (1-2 years)		47
Bull beef (0-13 months) ¹		30
Bull beef (6-13 months) ¹		23
Cattle (0-1 year) ¹		19
Calves (6-12 months) ¹		12
Calves (0-6 months) ¹		7
Sheep		
Ewe (over 1 year)		9
Ram (over 1 year)		9
Lamb (0-1 year) ¹		4.4
Lamb (6-12 months) ¹		3.2
Lamb (0-6 months) ¹		1.2
Pigs		
Boars ²		17.5
Maiden gilts ²		11.1
Breeding sows ² (including piglets to weaning)		15.9
	Approximate Sale weight	Nitrogen produced per pig (kg N)
Weaned at 3-4 weeks	18kg (7 1/2 weeks)	0.09
	35kg (11 weeks)	0.38
	105kg (23 weeks)	2.38
Weaned at 7 weeks	35kg (11 weeks)	0.29
	105kg (23 weeks)	2.30
Growing and Finishing pigs	18kg - 35kg	0.29
	18kg - 105kg	2.30
	35kg - 105kg	2.00

Livestock Type	Nitrogen produced / head / year (kg N)
Deer	
Deer (red) 6 months - 2 years	13
Deer (red) over 2 years	25
Deer (fallow) 6 months - 2 years	7
Deer (fallow) over 2 years	13
Deer (sika) 6 months - 2 years	6
Deer (sika) over 2 years	10
Horses	
Horse (over 3 yrs)	50
Horse (2-3 yrs)	44
Horse (1-2 yrs)	36
Horse (under 1 yrs)	25
Donkey / small pony	30
Goats	
Goat	9
Poultry	Nitrogen produced/1000 birds
Broilers (1000's) ³	38.6
Male turkeys (1000's) ⁴	611
Female turkeys (1000's) ⁵	363
Fattening ducks (1000's) ⁶	139
	Nitrogen produced/1000 birds per week
Broiler breeders (1000s) 0-18 wks ⁷	5.9
Broiler breeders (1000s) 18-60 wks ⁸	20.8
Broiler breeders (1000s) 0-60 wks ⁹	18.6
Pullets (1000s) ¹⁰	5.7
Layers (1000s) ¹¹	11.7

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

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

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 D - Approximate land requirements to meet 170kg N/ha/year livestock manure limit for various livestock types

Table 8. 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)**	0.40	0.99
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 $50 \times 0.48\text{ha} = 24\text{ha}$

100 dairy cow herd typically requires $100 \times 0.65\text{ha} = 65\text{ha}$

10,000 laying hen enterprise requires $10 \times 3.57\text{ha} = 35.7\text{ha}$

A 20,000 broiler house finishing 132,000 birds/year requires $132 \times 0.23\text{ha} = 30.36\text{ha}$

ANNEX E – 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.

Table 9. An example of how much livestock manure can be imported before the 170kgN/ha/year limit is met

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 = 7820kg – 5131kg	= 2689kg
Amount of dairy cow slurry (containing 3kg N/m ³) (see Annex F, page 66) that can be imported = 2689kg ÷ 3kg	= 896m ³ or (197,000 gallons)
Amount of pig slurry (containing 1.5 kgN/m ³) (see Annex F, page 66) that can be imported = 2689kg ÷ 1.5kg	= 1793m ³ or (394,460 gallons)
Amount of broiler litter (containing 30kgN/ m ³) (see Annex F, page 66) that can be imported = 2689kg ÷ 30kg	= 89.6t

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

Table 10. An example of how much livestock manure can be exported before the 170kgN/ha/year limit is met.

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 beef slurry containing (2.3kg N/m ³) (see Annex F, page 66) that must be exported = 1731kg ÷ 2.3kg	= 753m ³ or(165,660 gallons)

ANNEX F – Nutrient value of organic manures, as applicable from 1 January 2011

Table 11. Total Nitrogen content of organic manures on a fresh weight basis

Manure type	DM content (%)	Total nitrogen (kg/m ³)	N available	P available Kg P ₂ O ₅ /m ³
Dairy	2	1.5	0.6	0.6
	6	3.0	1.2	1.2
	10	4.0	1.6	2.0
Beef Cattle	2	1.0	0.4	0.6
	6	2.3	0.92	1.2
	10	3.5	1.4	2.0
Pigs	2	2	1	1.0
	4	3	1.5	2.0
	6	4	2	3.0
Separated cattle slurries (liquid portion)				
Strainer box	1.5	1.5	0.6	0.3
Weeping wall	3	2	0.8	0.5
Mechanical separator	4	3	1.2	1.2
Dirty water	less than 1	0.3	0.12	Trace
Solid manures		(kg/t)		(kgP₂O₅/t)
Broiler	60	30	9	25
Layers	30	16	4.8	13
Turkeys	60	30	9	25
Ducks	25	6.5	1.95	5.5
Cattle FYM	25	6.0	1.8	3.5
Sheep FYM	25	6.0	1.8	2.0
Pig FYM	25	7.0	2.1	7.0
Other organic manures	As per analysis	As per analysis	40% of total	100% of P total as per analysis

Figures in bold – most common values

ANNEX G – Maximum nitrogen fertiliser application limits (kg N/ha) for arable and forage crops

Note:

Nitrogen fertiliser includes all organic manures (including livestock manures) and chemical fertiliser.

For arable and forage crops, in situations where the soil type is uncertain, the following guidance may be used to assess the maximum crop nitrogen requirement. This guidance has been derived from RB209 and takes into account the most common soil types in Northern Ireland.

In order to establish the chemical nitrogen fertiliser crop requirement, three steps need to be followed.

1. Establish the SNS index from table 12 or 13 below. In most circumstances this will be SNS 1, unless the previous crop was vegetables or grass with a high nitrogen application.
2. Determine crop nitrogen requirement from table 12 or 13 below.
3. Remember if organic manures, including livestock manures are to be applied to the crop area, the nitrogen available from these manures (see Annex F) must be subtracted from the maximum nitrogen application rate.

Table 12. Maximum nitrogen fertiliser application limits (kg N/ha) for arable and forage crops

	Previous Crop		
	Cereals; sugar beet; peas; beans; oilseed rape; potatoes; Low/Medium N vegetables*; forage crops (cut); uncropped land; all leys with 2 or more cuts annually receiving little or no manure; 1-2 year leys, Low N***; 1-2 year leys, 1 or more cuts; 3-5 year leys, Low N***, 1 or more cuts.	High N vegetables; 1-2 year leys, High N**, grazed; 3-5 year leys, low N***, grazed; 3-5 year leys, High N**, 1 cut then grazed.	3-5 year leys, High N**, grazed.
	SNS 1	SNS 2	SNS 3
Winter Wheat	220	190	160
Winter Barley (feed)	170	140	110
Winter Malting Barley (1.8% grain nitrogen)	130	100	70
Winter Oats, Rye, Triticale	120	90	60
Winter Oilseed Rape	190 (+30 seedbed)	160 (+30 seedbed)	120
Spring Wheat	180	150	120
Spring Barley (feed)	140	110	70
Spring Malting Barley (1.8% grain nitrogen)	120	80	50
Spring Oats, Rye, Triticale	110	70	40
Spring Oilseed Rape	120	80	50
Spring Linseed	80	50	0-40
Forage Maize	100	50	20
Peas and Beans	0	0	0
Sugar Beet	120	100	80
Forage Swedes and Turnips (65 t/ha roots removed)	80	60	40
Forage Rape and Stubble Turnips (grazed)	90	80	60

	Previous Crop		
	Cereals; sugar beet; peas; beans; oilseed rape; potatoes; Low/Medium N vegetables*; forage crops (cut); uncropped land; all leys with 2 or more cuts annually receiving little or no manure; 1-2 year leys, Low N***; 1-2 year leys, 1 or more cuts; 3-5 year leys, Low N***, 1 or more cuts.	High N vegetables; 1-2 year leys, High N**, grazed; 3-5 year leys, low N***, grazed; 3-5 year leys, High N**, 1 cut then grazed.	3-5 year leys, High N**, grazed.
Fodder Beet and Mangels (65 t/ha roots removed)	120	110	90
Kale (40 t/ha cut)	120	110	90
Forage Rye and Forage Triticale (20 t/ha cut)	60	40	20

* Low residual nitrogen vegetables ('Low N vegetables') are crops such as carrots, onions, radish, swedes or turnips where the amount of crop residue is relatively small.

** High N grassland means average annual applications of more than 250 kg N/ha in fertiliser plus available nitrogen in manure used in the last two years, or clover-rich swards or lucerne.

*** Low N grassland means average annual inputs of less than 250 kg N/ha in fertiliser plus available nitrogen in manure used in the last two years, or swards with little clover.

Table 13. Maximum nitrogen fertiliser applications limits (kg N/ha) for potatoes

Note: Nitrogen fertiliser includes all organic manures (including livestock manures) and chemical fertiliser

		Previous Crop	
		SNS 1	SNS 2 and 3
Length of growing season ^(a) and variety group ^(b)		Cereals; sugar beet; peas; beans; oilseed rape; potatoes; Low/Medium N vegetables*; forage crops (cut); uncropped land; all leys with 2 or more cuts annually receiving little or no manure; 1-2 year leys, Low N***; 1-2 year leys, 1 or more cuts; 3-5 year leys, Low N***, 1 or more cuts	High N vegetables; 1-2 year leys, High N**, grazed; 3-5 year leys, low N***, grazed; 3-5 year leys, High N**, 1 cut then grazed; 3-5 year leys, High N**, grazed
		SNS 1	SNS 2 and 3
<60 days	Variety group 1	100-140	70-110
	Variety group 2	80-120	50-80
	Variety group 3	60-100	40-70
60-90 days	Variety group 1	160-210	130-160
	Variety group 2	100-160	60-120
	Variety group 3	60-140	40-100
	Variety group 4	40-80	20-40
90-120 days	Variety group 1	220-270	190-220
	Variety group 2	150-220	110-160
	Variety group 3	110-180	80-100
	Variety group 4	80-140	40-60
>120 days	Variety group 2	190-250	150-180
	Variety group 3	150-210	120-140
	Variety group 4	100-180	60-80

*Low residual nitrogen vegetables ('Low N vegetables') are crops such as carrots, onions, radish, swedes or turnips where the amount of crop residue is relatively small.

** High N grassland means average annual applications of more than 250 kg N/ha in fertiliser plus available nitrogen in manure used in the last two years, or clover-rich swards or lucerne.

*** Low N grassland means average annual inputs of less than 250 kg N/ha in fertiliser plus available nitrogen in manure used in the last two years, or swards with little clover.

(a) 50% emergence to haulm death

(b) Examples of varieties in each variety group are as follows:

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

ANNEX H - Fertiliser standards for application of phosphorus (P₂O₅) (kg/ha)

Table 14 Fertiliser standards for application of phosphorus (P₂O₅) (kg/ha) for grassland

	Soil Index				
	0	1	2	3	4
Grass establishment	120	80	50	30	0
Grazed grass (whole season)	80	50	20	0	0
First cut silage	100	70	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

Table 15 Fertiliser standards for application of phosphorus (P₂O₅) (kg/ha) for crops

	Soil Index				
	0	1	2	3	4
Straw ploughed in/incorporated					
- Winter wheat, winter barley	120	90	60	0	0
- Spring wheat, spring barley, rye, triticale	105	75	45	0	0
- Winter and spring oats	105	75	45	0	0
Straw removed					
- Winter wheat, winter barley	125	95	65	0	0
- Spring wheat, spring barley, rye, triticale	110	80	50	0	0
- Winter and spring oats	115	85	55	0	0
Winter oilseed rape	110	80	50	0	0
Spring oilseed rape	90	60	30	0	0
Peas	100	70	40	0	0
Maize	115	85	55	20	0
Forage swedes and turnips	105	75	45	0	0
Forage rape and stubble turnips	85	55	25	0	0
Fodder beet and mangels	110	80	50	0	0
Kale	110	80	50	0	0
Forage rye and forage triticale, peas	95	55	35	0	0
Maincrop potatoes	250	210	170	100	0
Early seed potatoes	250	210	170	100	0

ANNEX I - Space allowance for bedded livestock

Table 16. 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 J - 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 (for example midden)

(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⁾ (m)	Volume of Facilities for slurry = 3.14 x rad x rad x h (m ³)
1				
2				
3				
4				
5				
6				
Total capacity of rectangular tanks and lagoons				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 K - 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 L – Example of record required for imported and exported livestock manures.

Table 17. Example of the record required for imported and exported livestock manures.

Date moved	Imported or exported	Type of livestock manure	Quantity (tonnes or m³) (A)	Nitrogen content of manure kg/ m³ or kg/t (See Annex F) (B)	Total nitrogen kg (A x B)	Transporters' name and address	Recipient or donors name and address
14/9/2011	Exported	Pig Slurry	50	3	150	John Smith, 1 Farmview Rd	John Smith, 1 Farmview Rd
20/9/2011	Exported	Pig Slurry	50	3	150	John Smith, 1 Farmview Road	John Smith, 1 Farmview Road

(m³= 220 gallons)

Any total nitrogen (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 M - Example of record required for fertiliser details.

Opening stocks of chemical fertilisers 1 January 2011

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
9/2/2011	27:0:0	26.25	
11/3/2011	46:0:0	2.4	
12/3/2011	24:6:12	0.8	
15/3/2011	0:18:28	0.3	
1/4/2011	26:5:5	1.6	

Closing stocks of chemical fertilisers 31 December 2011

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

ANNEX N - Conversion factors

Volumes

- 1 cubic metre (m³) = 1000 litres
- 1 cubic metre (m³) = 220 gallons
- 1 litre (l) = 0.22 gallons
- 1 gallon = 0.0045m³ or 4.55 litres
- 1000 gallons equivalent to 4545 kilograms (4.5 tonnes)

Area

- 1 hectare (ha) = 10,000 square metres (m²)
- 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

- 1 m³ per hectare = 90 gallons per acre
- 1 gallon per acre = 0.011 m³ per hectare
- 50,000 litres per hectare = 50 m³ 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 P₂O₅ 1kg P₂O₅ = 0.44kg P

Notes:

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

ANNEX O - Contact details

Department of Agriculture and Rural Development (DARD)

Internet: www.dardni.gov.uk

Environment 0845 30 44 502

Agri-environment schemes. Countryside Management advice including Cross-Compliance, Nitrates Action Programme, Code of Good Agriculture Practice and Farm Waste Management.

Education and Training 0845 30 44 501

Education and training courses provided by College of Agriculture, Food and Rural Enterprise (CAFRE).

DARD Corporate Services 0845 30 44 510

DARD Headquarters, Press Office, information services and systems, human resources and facilities management.

Textphone 0845 30 44 511

For people with hearing difficulties.

Calls from non-UK numbers or networks / international calls

+44 (0)28 9037 8418

A list of DARD contact numbers can be obtained by visiting the Contact Us section of the DARD Web-Site - www.dardni.gov.uk

Department of the Environment (DOE)

Northern Ireland Environment Agency

Internet: www.doeni.gov.uk/niea

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 3279
Sewage Sludge to Land	028 9262 3279
Water Pollution Hotline (A 24-hour confidential hotline for reporting pollution incidents)	0800 80 70 60
Fax Number	028 9267 6054

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AN ROINN
**Talmhaíochta agus
Forbartha Tuaithe**

MÁNNYSTRIE O
**Fairms an
Kintra Fordèrin**

