Nitrates Action Programme 2015-2018 and Phosphorus Regulations Workbook

RECORDING YEAR:	
FARM BUSINESS NO:	
NAME:	

Department of
Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

NI EA
www.daera-ni.gov.uk
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You can download this workbook from our websites. Follow these links: www.daera-ni.gov.uk/nitrates-action-programme.htm

Contents (with hyperlinks)

Please note:-

It is not a requirement to calculate the various values for your farm (such as livestock manure nitrogen (N) loading, chemical N and phosphate application rates or the number of weeks storage capacity on farm) but without doing so, you may be unaware if you are above or below the various limits and so could be in breach of the Regulations.

For further information refer to the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Frequently used terms:-

Some frequently used terms and units in this workbook are defined below. For the definitions of other terms, please refer to the key definitions and glossary in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Freeboard: is the term given to the unfilled depth (safety margin) at the top of a slurry tank or compound. Mandatory freeboard allowances are at least 750 mm for earth bank lagoons and 300 mm for all other slurry stores. This is not a legal requirement for facilities completed before 1 December 2003 (unless they have been substantially modified). However, it is considered best management practice to adhere to freeboard allowances in all stores.

N: means nitrogen.

N-max and N-max crops: for the purposes of the NAP, N-max is an upper limit of N that can be applied to crops of winter/spring wheat, barley and oats (see definition in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet for more details).

P: means phosphorus.

P$_2$O$_5$: means phosphate.

P-rich manures: for the purposes of the NAP, organic manures which contain more than 0.25 kg of total phosphorus (P) per 1 kg of total N are considered to be P-rich manures. The proportion P to N of a number of common organic manures is set out in **Annex G** of NAP 2015-2018 and Phosphorus Regulations Guidance Booklet. Examples of P-rich manures would include some anaerobic digestates and some pig slurries and manures.

NAP and Phosphorus Regulations record checklist

Information required and recommended record sources		
(annexes referred to are annexes of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet)		
All farm businesses		
Eligible agricultural area	If claiming Basic Payment Scheme	Copy of relevant SAF/IACS form.
		Letter from DAERA stating the area deemed eligible to activate entitlements each scheme year and your latest DAERA map.
	If not claiming Basic Payment Scheme	If not claiming Basic Payment Scheme, evidence of the fields and the area that you are farming each year.
	Common land	Provide evidence of the rights of use and area of common land if applicable.
If you keep livestock		
Livestock numbers	All livestock types	Enterprise management software or numbers recorded in the NAP Guidance Workbook, which is available on-line at www.daera-ni.gov.uk/nitrates-action-programme.htm Stock numbers should be taken at least on the first day of each alternative month. For example, 1 Feb, 1 Apr, 1 Jun, 1 Aug, 1 Oct, 1 Dec.
		Or
	Cattle	DAERA Herd Register for Bovine Animals or APHIS online records[1].
	Sheep	DAERA Flock Register or APHIS online records*.[1]
	Pigs	DAERA Herd Register for Pigs.
	Poultry	Company audit records or welfare legislation records or quality assurance records or egg marketing legislation records.
If you keep livestock and store organic manures		

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[1] Aphis online records can be accessed at www.daera-ni.gov.uk/services/daera-online-services

NAP and Phosphorus Regulations record checklist

Information required and recommended record sources *(annexes referred to are annexes of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet)*		
Livestock manure storage capacity	Storage capacity	On farm confirmation of storage capacity, for example, dimensions of tanks, e.g. 25 m x 4 m x 1.8 m. *Or* An approved *farm nutrient management scheme* (FNMS) application, if the information still reflects the current livestock storage on the farm. Remember to include slurry collected from open yards, roof water (if allowed to flow onto dirty yards) and an allowance for silage effluent in your calculations.
	Housing term	Numbers and length of time livestock housed during winter.
	Separated cattle/sheep slurry	Note of amount of cattle/sheep slurry separated.
	Rented storage facilities	Rental agreements containing details of any rented storage facilities or silage clamps (**Annex L).**
If you keep livestock and need a storage allowance		
Livestock manure storage capacity allowances (if applicable)	Out-wintered livestock	Numbers, type and length of time livestock out-wintered.
		Note on SAF/IACS form or DAERA farm map of area and location of land used to out-winter.
	Bedded livestock	Numbers, type and length of time livestock bedded.
	Poultry litter stored in a midden	Details of poultry litter which is stored in a midden.
	Poultry litter stored in a field heap	NIEA will check that authorisation has been obtained for any poultry litter field heaps.
	Slurry exported to processing facility	Valid contractual agreements with processing facilities or evidence of access to an approved treatment or recovery outlet (**Annex M**).

NAP and Phosphorus Regulations record checklist

Information required and recommended record sources *(annexes referred to are annexes of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet)*		
If you use chemical fertilisers		
Chemical nitrogen (N) and phosphate (P$_2$O$_5$) usage	Annual chemical fertiliser stock balance	Record of fertiliser stock on 1 January - tonnage and N and P$_2$O$_5$ content (**Annex O**).
		Record of fertiliser stock on 31 December – tonnage and N and P$_2$O$_5$ content (**Annex O**).
	Annual chemical fertiliser movements	Dated fertiliser invoices or receipts or a list of purchases showing:- – certified N and P$_2$O$_5$ content of chemical fertiliser; and – tonnage bought/sold.
		The tonnage and N and P$_2$O$_5$ content of fertiliser imported in and exported off the farm (other than bought/sold), if applicable (**Annex O**).
If you apply any organic manures apart from livestock manure to grassland		
Grassland fertiliser details	Total area of grassland	Grassland field areas from SAF/IACS form.
	Other organic manure fertiliser details (apart from livestock manure)	The type, amount and N content of organic manure applied to grassland area.
If you grow winter/spring wheat, barley or oats (N-max crops)		
N-max crop fertiliser details	Cropping regimes and their individual areas	Note the type of crops, for example, spring barley, winter wheat, and record on SAF/IACS form or DAERA farm map.
	N fertiliser application details	Type, amount and N content of all fertilisers containing N (chemical and organic including livestock manures) applied to each crop area.
	If N-max limits have been exceeded	Records of previous three years' total grain yield weights and total areas harvested for each crop type for which N-max limits have been exceeded.

NAP and Phosphorus Regulations record checklist

Information required and recommended record sources *(annexes referred to are annexes of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet)*		
If you grow any other crops		
Other crops fertiliser details	Cropping regimes and their individual areas	Note the type of crops, for example, potatoes, maize, and record on SAF/IACS form or DAERA farm map.
	SNS index for other crops	Previous crop grown.
		If known, soil type. If soil type is unknown the tables in **Annex H** may be used to establish SNS index.
	N fertiliser application details	Type, amount and N content of all fertilisers containing N (chemical and organic including livestock manures) applied to each crop area.
If you export or import organic manures		
Imported/exported organic manures	All organic manures	Record of: - – Amount and type of each manure. – Date imported/exported. – Name and Business ID of importer/ exporter. – Signature of exporter. – Name and address of transporter (if 3rd party). See **Annex N** for example import/export records
	Organic manures other than livestock manures	N content of organic manures (apart from livestock manures and spent mushroom compost) provided by the producer in accordance with waste or sewage sludge regulation or Quality Protocol.
		Where appropriate - waste transfer note and copy of exemption from waste management licensing.
If you apply chemical phosphate (P_2O_5) fertiliser or (from 2017) P-rich[2] **organic manures to any land**		

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[2] P-rich organic manures are those containing more than 0.25 kg of total P per 1 kg of total N.

Information required and recommended record sources *(annexes referred to are annexes of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet)*		
Phosphorus controls	Size and location of each field to which chemical P_2O_5 fertiliser or P-rich manure has been applied	Note the fields to which chemical phosphate fertiliser or P-rich manure has been applied on SAF/IACS form or DAERA farm map.
	Type of crop sown	Type and date of crops grown in above fields noted on the SAF/IACS form or DAERA farm map.
	Results of soil P test	DAERA farm map indicating fields sampled or soil sample results showing field identification details.
		Results of soil analysis with UK Accreditation (or National Equivalent) statement for the soil P test, relating sampling site to Olsen extractable P content and soil P index.
	Phosphate fertiliser application details	Type, amount and available phosphate content of all fertilisers containing phosphate (chemical and organic including livestock manures) applied to fields to which chemical P_2O_5 fertiliser/P-rich manure has been applied.
		Dates of applications.

Please note:-
- 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's compliance with the various measures then this is satisfactory.
- Remember to refer to the previous NAP and Phosphorus Guidance Booklet and Workbook, published in 2011, in relation to keeping records relating to the previous NAP period (2011 to 2014).
- For additional information, please refer to **Section 10** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Section 1 - Calculating Livestock Manure Nitrogen (N) Loading

To calculate the livestock manure nitrogen loading for your farm using this workbook:-

- Complete the relevant worksheets in Section 1.1 - Livestock Manure Nitrogen Loading Worksheets.

- Transfer the relevant figures from Section 1.1 to Section 1.2 as directed.

- Complete Section 1.2 – Nitrogen Loading Calculation.

Alternatively, you can access the 'Nitrogen Loading Calculator' at www.daera-ni.gov.uk/onlineservices

Refer to **Section 5.1.1** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet for additional information.

Note: The APHIS online report classifies cattle as either dairy or beef based on the typical use of the breed, e.g. Friesian is dairy and Aberdeen Angus is beef. However, the N loading calculation is based on the actual use of the breed, i.e. milked cows are classified as dairy and suckled cows as beef regardless of the breed.

Section 1.1 – Livestock manure nitrogen loading worksheets

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

An accurate record of cattle type and numbers kept each year can be obtained using the 'Nitrate Stock Count' function on APHIS Online which you can access from Online services at www.daera-ni.gov.uk/onlineservices. See note on **page 8**.

Please ensure that for your farm any breeds that are traditionally beef, but are being milked are classified as dairy and breeds that are traditionally dairy, but are being suckled are classified as beef for the purposes of the N loading calculation.

1. Enter the average number of dairy livestock on the farm from 1 January to 31 December.
2. Multiply the average number by the N produced per head per year.
3. Total the N produced per year and insert in Box A. **Transfer your answer to Box A on page 20.**

Livestock type	Average number per year		N produced per head per year		N produced (kg N per year)
Dairy Cattle	**No.**	**x**	**kg N**	**=**	**Answer**
Dairy cows		x	91	=	
Dairy heifer (over 2 years)		x	54	=	
Dairy heifer (1-2 years)		x	47	=	
Breeding bull		x	54	=	
Dairy calves:- to prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories.					
0-1 year		x	19	=	
OR					
6-12 months		x	12	=	
0-6 months		x	7	=	
Total livestock manure N produced by dairy cattle (kg N per year)					**(A)**

Worksheet B – Livestock manure nitrogen (N) produced by beef livestock
(Only complete this table if you keep these livestock).

An accurate record of cattle type and numbers kept each year can be obtained using the 'Nitrate Stock Count' function on APHIS Online, which you can access from Online services at www.daera-ni.gov.uk/onlineservices. See note on **page 8**.

1. Enter the average number of beef livestock on the farm from 1 January to 31 December.
2. Multiply the average number per year by the N produced per head per year.
3. Total the N produced per year and insert in Box B. **Transfer your answer to Box B on page 20.**

Livestock type	Average number per year		N produced per head per year		N produced (kg N per year)
Beef Cattle	No.	x	kg N	=	Answer
Suckler cows		x	54	=	
Cattle (over 2 years)		x	54	=	
Cattle (1-2 years)		x	47	=	
Breeding Bull		x	54	=	
Beef calves:- to prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories.					
0-1 year		x	19	=	
OR					
6-12 months		x	12	=	
0-6 months		x	7	=	
Bull beef calves:- to prevent the same animal being counted twice use either "0-13.5 months" **OR** "0-6 months" and/or "6-13.5 months" categories					
0-13.5 months		x	30	=	
OR					
6-13.5 months		x	23	=	
0-6 months		x	7	=	
Total livestock manure N produced by beef livestock (kg N per year)					**(B)**

10

Worksheet C – Livestock manure nitrogen (N) produced by sheep
(Only complete this table if you keep these livestock).

An accurate record of sheep and numbers kept each year can be obtained using the 'Nitrate Stock Count' function on APHIS Online, which you can access from Online services at www.daera-ni.gov.uk/onlineservices.

1. Enter the average number of sheep on the farm from 1 January to 31 December.
2. Multiply the average number per year by the N produced per head per year.
3. Total the N produced per year and insert in Box B. **Transfer your answer to Box C on page 20.**

Livestock type	Average number per year		N produced per head per year		N produced (kg N per year)
Sheep	**No.**	**x**	**kg N**	**=**	**Answer**
Ewe (over 1 year)		x	9.0	=	
Ram (over 1 year)		x	9.0	=	
Lambs:- to prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories.					
Lambs 0-1 year		x	4.4	=	
OR					
Lambs 6-12 months		x	3.2	=	
Lambs 0-6 months		x	1.2	=	
Total livestock manure N produced by sheep (kg N per year)					**(C)**

Worksheet D – Livestock manure nitrogen (N) produced by deer and goats
(Only complete this table if you keep these livestock).

1. Enter the average number of deer and/or goats on the farm.
2. Multiply the average number per year by the N produced per head per year.
3. Total the N produced per year and insert in Box D. **Transfer your answer to Box D on page 20.**

Livestock type	Average number per year		N produced per head per year		N produced (kg N per year)
Deer	**No.**	**x**	**kg N**	**=**	**Answer**
Deer (red) over 2 years		x	15	=	
Deer (red) 6 months–2 years		x	12	=	
Deer (fallow) over 2 years		x	13	=	
Deer (fallow) 6 months–2 years		x	7	=	
Deer (sika) over 2 years		x	10	=	
Deer (sika) 6 months–2 years		x	6	=	
Goats	**No.**	**x**	**kg N**	**=**	**Answer**
Milking goat		x	15	=	
Non-milking goat		x	9	=	
Kids:- To prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories					
0-1 year		x	4.4	=	
OR					
6-12 months		x	3.2	=	
0-6 months		x	1.2	=	
Total livestock manure N produced by deer and goats (kg N per year)					**(D)**

12

Worksheet E – Livestock manure nitrogen (N) produced by horses
(Only complete this table if you keep these livestock).

1. Enter the average number of horses on the farm.
2. Multiply the average number per year by the N produced per head per year.
3. Total the N produced per year and insert in Box E. **Transfer your answer to Box E on page 20.**

Livestock type	Average number per year		N produced per head per year		N produced (kg N per year)
Horses	**No.**	**x**	**kg N**	**=**	**Answer**
Horse > 3 years old		x	50	=	
Horse 2-3 years old		x	44	=	
Horse 1-2 years old		x	36	=	
Horse foal < 1 year old		x	25	=	
Donkey/small pony		x	30	=	
Total livestock manure N produced by horses (kg N per year)					**(E)**

13

Worksheet F – Livestock manure nitrogen (N) produced by breeding pigs per year
(Only complete this table if you keep these livestock).

1. Enter the number of pigs on the unit at any one time.
2. Enter the total number of pigs sold/transferred off the unit in the year for each weight range. You can select more than one weight.
3. Multiply the number on the unit and the number sold/transferred per year by the N produced per head per year. Total the N produced per year and insert in Box F. **Transfer your answer to Box F on page 20.**

Livestock type	Number on unit per year[1]		N produced per head per year		Total N produced (kg N per year)
Pigs	No.	x	kg N	=	Answer
Boars[1]		x	**18**	=	
Maiden gilts[1]		x	**11**	=	
Lactating sows[2], dry sows, served gilts[1]		x	**16**	=	
Sale/transfer weight of pigs (kg)	**Number sold/transferred per year**	x	**N produced per head per year**	=	**Total N produced (kg N per year)**
	No.	x	kg N	=	Answer
18		x	**0.09**	=	
35		x	**0.38**	=	
105		x	**2.38**	=	
Total livestock manure N produced by breeding pigs (kg N per year)					**(F)**

[1] Average number on the unit at any one time and not the total number entering the herd.
[2] Lactating sow figure includes suckling pigs to weaning.

Worksheet G – Livestock manure nitrogen (N) produced by growing/finishing pigs per year
(Only complete this table if you keep these livestock).

1. Enter the number of pigs sold or sent to slaughter in the year.
2. Multiply the number per year by the N produced per head per year.
3. Total the N produced per year and insert in Box G. **Transfer your answer to Box G on page 20.**

Livestock type	Number sold or sent to slaughter per year		N produced per head per year		Total N produced (kg N per year)
Growing/finishing Pigs	**No.**	**x**	**N**	**=**	**Answer**
7 kg-18 kg		x	0.09	=	
7 kg-35 kg		x	0.38	=	
7 kg-105 kg		x	2.38	=	
18 kg-35 kg		x	0.29	=	
18 kg-105 kg		x	2.30	=	
35 kg-105 kg		x	2.00	=	
Total livestock manure N produced by pigs (kg N per year)				**=**	**(G)**

15

Worksheet H – Livestock manure nitrogen (N) produced by poultry per year
(Only complete this table if you keep these livestock).

1. Select either Table H1 or Table H2, depending on your production system.
2. Enter either the number of birds produced on your farm per year, Table H1, or the unit capacity in Table H2.
3. If using Table H2 enter the number of weeks occupancy and multiply this by the unit capacity to give the number of birds produced per year.
4. Multiply the number of birds by the N produced per 1,000 birds.
5. Total the N produced per year and insert in Box H in Table H2. **Transfer your answer to Box H on page 20.**

Table H1

Livestock type	Number of birds produced per year		N produced per 1,000 birds		N produced (kg N per year)
Poultry	No.	x	kg N	=	Answer
Broilers (1,000's)		x	40	=	
Male turkeys (1,000's)		x	611	=	
Female turkeys (1,000's)		x	363	=	
Fattening ducks (1,000's)		x	139	=	
Total N					

Table H2

Livestock type	Unit capacity (1,000s)		Number weeks occupancy		Planned number of birds produced		N produced per 1,000 birds per week		N produced (kg N per year)
Poultry	**No**	**x**	**No**	**=**	**No**	**x**	**N**	**=**	**Answer**
Broiler breeder (1,000s) 0-18 weeks		x		=		x	5.9	=	
Broiler breeders (1,000s) 18-60 weeks		x		=		x	21	=	
Broiler breeder (1,000s) 0-60 weeks		x		=		x	19	=	
Pullets (1,000s)		x		=		x	5.7	=	
Layers (1,000s)		x		=		x	12	=	
Total N from Table H2									
Total N from Table H1									
Total livestock manure N produced by poultry (kg N per year) (Table H1 & Table H2)									**(H)**

Worksheet I – Livestock manure nitrogen (N) from slurry and manure IMPORTED onto the farm
(Only complete this table if you import slurry and manure onto your farm).

1. Select the type of slurry/manure and dry matter (DM) and insert the volume or tonnage. Typical DM is 6% for cattle slurry and 4% for pig slurry.
2. Total the N imported per year and insert in Box I. **Transfer your answer to Box I on page 20.**

Slurry type	Imported quantity (m³)		N content (kg N per m³)		N imported (kg N per year)
Cattle slurry – 2% DM		x	1.6	=	
Cattle slurry – 6% DM		x	**2.6**	=	
Cattle slurry – 10% DM		x	3.6	=	
Pig slurry – 2% DM		x	3	=	
Pig slurry – 4% DM		x	**3.6**	=	
Pig slurry – 6% DM		x	4.4	=	
Separated cattle slurry (liquid portion):-					
- Strainer box		x	1.5	=	
- Weeping wall		x	2	=	
- Mechanical separator		x	3	=	
Separated pig slurry (liquid portion)		x	3.6	=	
Other (e.g. digestate)*		x		=	
Manure type	**Imported quantity (t)**		**N content (kg N per t)**		**N imported (kg N per year)**
Cattle FYM – 25% DM		x	6	=	
Sheep manure FYM – 25% DM		x	7	=	
Pig manure FYM – 25% DM		x	7	=	
Broiler litter – 66% DM		x	33	=	
Layer manure* – 30% DM		x	16	=	
Turkey litter* – 60% DM		x	30	=	
Duck manure* – 25% DM		x	6.5	=	
Horse manure FYM – 30% DM		x	7	=	
Goat manure FYM – 25% DM		x	6	=	
Spent mushroom compost		x	8	=	
Separated cattle slurry (solid portion)		x	4	=	
Separated pig slurry (solid portion)		x	5	=	
Other**		x		=	
Total livestock manure N from imported slurry and manure (kg N per year)				=	**(I)**

* Please note that the N Content values for layer manure, turkey litter and duck manure may change if further research into the nutrient content of poultry manures is carried out.
** See N content provided by producer or waste transfer note/copy of exemption from waste management licensing.
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Worksheet J – Livestock manure nitrogen (N) from slurry and manure EXPORTED from the farm
(Only complete this table if you export slurry and manure from your farm).

1. Select the type of slurry/manure and dry matter (DM) and insert the volume or tonnage. Typical DM is 6% for cattle slurry and 4% for pig slurry.
2. Total the N exported per year and insert in Box J. **Transfer your answer to Box J on page 20.**

Slurry type	Exported quantity (m³)		N content (kg N per m³)		N exported (kg N per year)
Cattle slurry – 2% DM		x	1.6	=	
Cattle slurry – 6% DM		x	**2.6**	=	
Cattle slurry – 10% DM		x	3.6	=	
Pig slurry – 2% DM		x	3	=	
Pig slurry – 4% DM		x	**3.6**	=	
Pig slurry – 6% DM		x	4.4	=	
Separated cattle slurry (liquid portion):-					
- Strainer box		x	1.5	=	
- Weeping wall		x	2	=	
- Mechanical separator		x	3	=	
Separated pig slurry (liquid portion)		x	3.6	=	
Other (e.g. digestate)*		x		=	
Manure type	**Exported quantity (t)**		**N content (kg N per t)**		**N exported (kg N per year)**
Cattle FYM – 25% DM		x	6	=	
Sheep manure FYM – 25% DM		x	7	=	
Pig manure FYM – 25% DM		x	7	=	
Broiler litter – 66% DM		x	33	=	
Layer manure* – 30% DM		x	16	=	
Turkey litter* – 60% DM		x	30	=	
Duck manure* – 25% DM		x	6.5	=	
Horse manure FYM – 30% DM		x	7	=	
Goat manure FYM – 25% DM		x	6	=	
Spent mushroom compost		x	8	=	
Separated cattle slurry (solid portion)		x	4	=	
Separated pig slurry (solid portion)		x	5	=	
Other**		x		=	
Total livestock manure N from exported slurry and manure (kg N per year)		**=**			**(J)**

* Please note that the N Content values for layer manure, turkey litter and duck manure may change if further research into the nutrient content of poultry manures is carried out.
** See N content provided by producer or waste transfer note/copy of exemption from waste management licensing.

Section 1.2 – Livestock manure nitrogen loading calculation

Step 1: Calculate the nitrogen (N) from livestock manure

- Transfer the answers from the relevant worksheets to enter the amount of livestock manure N from each of the enterprises on your farm.
- Adjust for any slurry/manure imported or exported and add up to give the total livestock manure N on the farm.
- You must account for all livestock manure produced from any animal kept for use or profit.

Livestock manure N		(kg N per year)		How do I calculate this figure?
Dairy cattle	A		←	Worksheet A, **page 9**.
	+	+		
Beef cattle	B		←	Worksheet B, **page 10**.
	+	+		
Sheep	C		←	Worksheet C, **page 11.**
	+	+		
Deer and goats	D		←	Worksheet D, **page 12**.
	+	+		
Horses	E		←	Worksheet E, **page 13**.
	+	+		
Breeding pigs	F		←	Worksheet F, **page 14**.
	+	+		
Growing and finishing pigs	G		←	Worksheet G, **page 15.**
	+	+		
Poultry	H		←	Worksheet H, **page 17**.
	+	+		
Imported slurry/manure	I		←	Worksheet I, **page 18**.
	-	-		
Exported slurry/manure	J		←	Worksheet J, **page 19**.
	=	=		
Total livestock manure N (A+B+C+D+E+F+G+H+I-J)	K			

Step 2: Calculate the eligible agricultural area

Calculate the total area (ha) which you control. Further information about this can be found in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet, **Section 1.3**.

Eligible agricultural area (ha)	L	

Step 3: Calculate the livestock manure nitrogen (N) loading

Calculate the annual livestock manure N loading for your farm by dividing the total livestock manure N by theeligible agricultural area.

Total livestock manure N (kg)	K		←	Transfer answer from Step 1 on **page 20**.

$\div$ $\div$

Eligible agricultural area (ha)	L		←	Transfer answer from Step 2 above.

=   =

Livestock manure N loading (kg per ha per year) (**K÷L**)	M		←	Is your figure below 170 kg N per ha per year?

If your loading is above the 170 kg N per ha per year limit, your options are to apply for a Nitrates Derogation, consider taking additional eligible land, export livestock manure or reduce livestock numbers.

Operating under an approved derogation will allow you to farm above 170 kg N per ha per year to a limit of 250 kg N per ha per year from grazing livestock manure, subject to your farm meeting certain key criteria. You may wish to consider this for future years. 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. Further information about the Nitrates Derogation can be found in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet, **Section 5.1.4** and in the Nitrates Directive Derogation Guidance Booklet 2015-2018.

Section 2 - Calculating Livestock Manure Storage Capacity

To calculate the manure storage capacity for your farm using this workbook:-

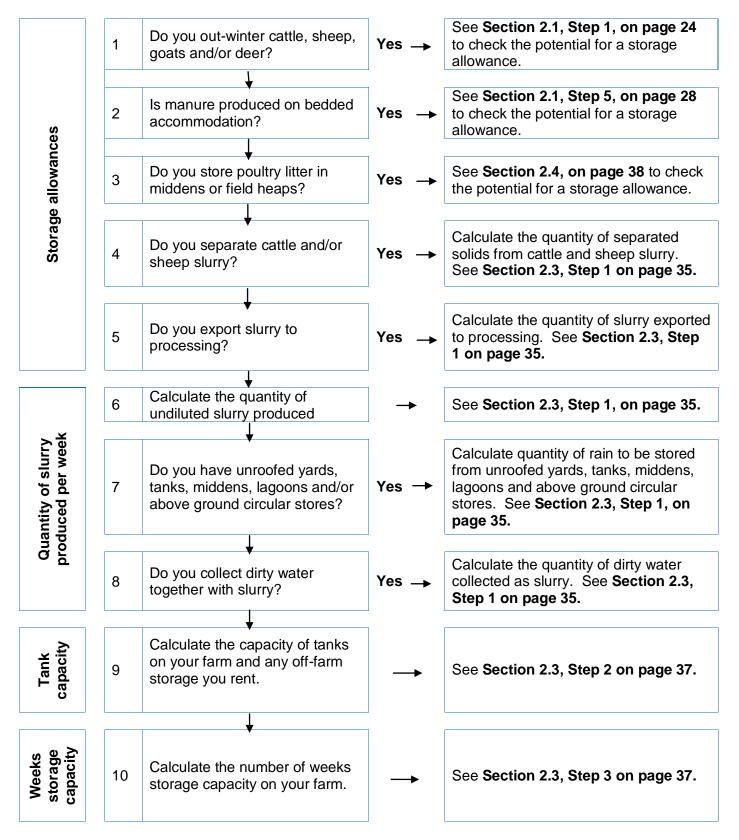- Only complete Section 2.1 if you intend to use of storage allowances for out-wintering or bedding livestock.

- Complete Section 2.2 and Section 2.3.

- Transfer the relevant figures from Section 2.2 to Section 2.3 as directed.

- Only complete Section 2.4 if you produce poultry litter on your farm.

Alternatively, you can access the 'Manure Storage Calculator' at www.daera-ni.gov.uk/onlineservices

Section 2 - Calculating Livestock Manure Storage Capacity

Refer to Section 8 of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet for additional information.

The process to calculate the livestock manure storage on your farm is outlined below.

Storage allowances	1	Do you out-winter cattle, sheep, goats and/or deer?	**Yes** → See **Section 2.1, Step 1, on page 24** to check the potential for a storage allowance.
	2	Is manure produced on bedded accommodation?	**Yes** → See **Section 2.1, Step 5, on page 28** to check the potential for a storage allowance.
	3	Do you store poultry litter in middens or field heaps?	**Yes** → See **Section 2.4, on page 38** to check the potential for a storage allowance.
	4	Do you separate cattle and/or sheep slurry?	**Yes** → Calculate the quantity of separated solids from cattle and sheep slurry. See **Section 2.3, Step 1 on page 35.**
	5	Do you export slurry to processing?	**Yes** → Calculate the quantity of slurry exported to processing. See **Section 2.3, Step 1 on page 35.**
Quantity of slurry produced per week	6	Calculate the quantity of undiluted slurry produced	→ See **Section 2.3, Step 1, on page 35.**
	7	Do you have unroofed yards, tanks, middens, lagoons and/or above ground circular stores?	**Yes** → Calculate quantity of rain to be stored from unroofed yards, tanks, middens, lagoons and above ground circular stores. See **Section 2.3, Step 1, on page 35.**
	8	Do you collect dirty water together with slurry?	**Yes** → Calculate the quantity of dirty water collected as slurry. See **Section 2.3, Step 1 on page 35.**
Tank capacity	9	Calculate the capacity of tanks on your farm and any off-farm storage you rent.	→ See **Section 2.3, Step 2 on page 37.**
Weeks storage capacity	10	Calculate the number of weeks storage capacity on your farm.	→ See **Section 2.3, Step 3 on page 37.**

Section 2.1 – Allowances when calculating storage requirements

Allowances may be made for manure produced from animals which:-

- are out-wintered (Steps 1-4); or
- on bedded accommodation (Step 5).

Refer to Section 8.1 of NAP 2015-2018 and Phosphorus Regulation Guidance Booklet for additional information.

Step 1: Allowances for out-wintered livestock

1. Check potential to make a storage allowance for out-wintered livestock in Table 1 below. Refer to your nitrogen (N) loading calculation for your annual loading kg N per ha per year (stocking rate).

Table 1

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

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

If you meet the annual stocking rate limit, continue by completing Worksheets A and B.

Step 2: Calculate the stocking rate on the out-wintered area by completing Worksheets A and B

Worksheet A
(Only complete this table if you keep these livestock).

An accurate record of cattle type and numbers kept each year can be obtained using the 'Nitrate Stock Count' function on APHIS Online, which you can access at www.daera-ni.gov.uk/onlineservices.

1. Enter the average number of beef cattle and/or sheep on the farm over the winter period (Feb, Oct, Dec).
2. Multiply the average number over the winter by the N produced per head per year.
3. Total the N produced and insert in Box A. **Transfer your answer to Box A on page 27.**

Livestock type	Average over winter	x	N produced per head per year	=	N produced (kg N)
Cattle	No.	x	kgN	=	Answer
Suckler cows		x	54	=	
Cattle (over 2 years)		x	54	=	
Cattle (1-2 years)		x	47	=	
Breeding bull		x	54	=	
Beef calves:- to prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories.					
0-1 year		x	19	=	
OR					
6-12 months		x	12	=	
0-6 months		x	7	=	
Sheep	No.	x	kg N	=	Answer
Ewe (over 1 year)		x	9	=	
Ram (over 1 year)		x	9	=	
Lambs:- to prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories.					
0-1 year		x	4.4	=	
OR					
6-12 months		x	3.2	=	
0-6 months		x	1.2	=	
Total livestock manure N produced by out-wintered cattle and sheep				=	**(A)**

Worksheet B
(Only complete this table if you keep these livestock).

1. Enter the average number of deer and goats on the farm over the winter period (Feb, Oct and Dec).
2. Multiply the average number over the winter by the N produced per head per year.
3. Total the N produced and insert in Box B. **Transfer your answer to Box B on page 27.**

Livestock type	Average over winter		N produced per head per year		N produced (kg N)
Deer	**No.**	**x**	**kg N**	**=**	**Answer**
Deer (red) over 2 years		x	15	=	
Deer (red) 6 months – 2 years		x	12	=	
Deer (fallow) over 2 years		x	13	=	
Deer (fallow) 6 months – 2 years		x	7	=	
Deer (sika) over 2 years		x	10	=	
Deer (sika) 6 months – 2 years		x	6	=	
Goats	**No.**	**x**	**kg N**	**=**	**Answer**
Milking goat		x	15	=	
Non-milking goat		x	9	=	
Kids:- to prevent the same animal being counted twice use either "0-1 year" **OR** "0-6 months" and/or "6-12 months" categories.					
0-1 year		x	4.4	=	
OR					
6-12 months		x	3.2	=	
0-6 months		x	1.2	=	
Total livestock manure N produced by out-wintered deer and goats (kg N)				**=**	**(B)**

Step 3: – Transfer the answers from the relevant tables as directed below

Livestock manure N from out-wintered cattle and sheep (kg N)	**A**	← Complete Worksheet A on **page 25** to calculate this figure.

<div align="center">+   +</div>

Livestock manure N from out-wintered deer and goats (kg N)	**B**	← Complete Worksheet B on **page 26** to calculate this figure.

<div align="center">=   =</div>

Total livestock manure N from out-wintered cattle, sheep and deer and goats (kg N) (A + B)	**C**	← **Total the N produced by out-wintered cattle, sheep, deer and goats.**

<div align="center">+   +</div>

Out-wintered eligible land area (ha)	**D**	← Enter the eligible area of land used for out-wintering cattle, sheep, deer and goats.

<div align="center">=   =</div>

Stocking rate on out-wintered area (kg N per ha) (C ÷ D)	**E**	**Divide the total N produced by out-wintered livestock (C) by the area of land used (D). See Table 4 below to check if you can avail of storage allowances for out-wintered livestock.**

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

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

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

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

Step 5: Allowances for livestock on bedded accommodation

The quantity of slurry produced from animals housed in bedded accommodation and collected as farmyard manure, for the 22-week period, does not need to be taken into account when calculating a farm's slurry storage capacity provided that the conditions outlined in **Section 8.1** of the Nitrates Action Programme 2015-2018 and Phosphorus Guidance Booklet are met.

Complete Worksheet F if you wish to discount manure produced by livestock in bedded accommodation from the calculation of your farm's storage requirements:-

Worksheet F

1. Enter the average number of livestock to be bedded on the farm over the winter period.

Livestock type	Average over winter
Cattle	**No.**
Dairy cow	
Suckler cow	
Cattle over 2 years	
Cattle 1-2 years	
Calves 6 months – 1 year	
Calves 0 – 6 months	
Sheep	
Ewe/ram (over 1 year)	
Lamb (6-12 months)	
Lamb (0-6 months)	
Deer	**No.**
Deer (red) over 2 years	
Deer (red) 6 months – 2 years	
Deer (fallow) over 2 years	
Deer (fallow) 6 months – 2 years	
Deer (sika) over 2 years	
Deer (sika) 6 months – 2 years	
Goats	**No.**
Goat	
Kid	
Pigs	**No.**
Pigs	

Section 2.2 – Manure storage worksheets

Worksheets G and H: Calculate quantity of undiluted slurry produced per week
1.   Enter the average number of livestock kept on the farm over the winter period (Feb, Oct & Dec). **Exclude** livestock numbers if they meet the out-wintering and/or bedded eligibility (to calculate the allowances refer to **Section 2.1 which begins on page 24**). For pigs and poultry, enter the average number on the unit.
2.   Multiply the average number over the winter period by the quantity of slurry produced per animal per week.
3.   Total the quantity of slurry produced by cattle and sheep insert in Box G. **Transfer your answer to Section 2.3, Box G on page 35.**
4.   Total the quantity of slurry produced by pigs and poultry and insert in Box H. **Transfer your answer to Section 2.3, Box H on page 35.**

Livestock type	Average over winter		Slurry per animal per week		Slurry produced per week (m^3 per week)
Cattle	No.	x	m^3	=	Answer
Dairy cow		x	0.37	=	
Suckler cow		x	0.23	=	
Cattle over 2 years		x	0.23	=	
Cattle 1-2 years		x	0.18	=	
Calves 6 months-1 year		x	0.09	=	
Calves 0-6 months		x	0.05	=	
Sheep	No.	x	m^3	=	Answer
Adult ewe/ram		x	0.03	=	
Fattening lamb		x	0.01	=	
Total quantity undiluted cattle and sheep slurry per week (m^3 per week)				=	**(G)**

Livestock type[1]	Average number on unit[3]		Slurry per animal per week		Slurry produced per week (m^3 per week)
Pig	**No.**	**x**	**m^3**	**=**	**Answer**
Maiden gilt		x	0.05	=	
Dry/lactating sows[2]/served gilts		x	0.08	=	
Weaners –(stage 1) 7-18 kg		x	0.01	=	
Grower (stage 2) 18-35 kg		x	0.02	=	
Finisher dry fed (stage 3) 35-105 kg		x	0.03	=	
Finisher liquid fed (stage 3) 35-105 kg		x	0.05	=	
Poultry	**No.**	**x**	**m^3**	**=**	**Answer**
1,000 laying hens		x	0.81	=	
1,000 ducks		x	0.81	=	
Total quantity undiluted pig and poultry slurry per week (m^3 per week)				**=**	**(H)**

[1] The standard figure for slurry production does not include water for cleaning buildings.
[2] Lactating sow figure includes suckling pigs.
[3] Average number on the unit at any one time.

Worksheet I: Calculate quantity of rainfall falling on yards where slurry is produced plus the quantity of rainfall entering unroofed tanks per week

1. Enter the dimensions of the yards and/or tanks and multiply them by the rainfall per week.
2. Total the quantity of rainfall mixed with slurry produced by cattle and sheep and insert in Box I. Transfer your answer to **Section 2.3, Box I on page 35.**
3. Total the quantity of rainfall mixed with slurry produced by pigs and poultry and insert in Box J. Transfer your answer to **Section 2.3, Box J on page 35**.

Rainfall falling on unroofed yards where slurry is produced					
Area	Description	Length (m)	Breadth (m)	Rainfall per week[1] (m)	Quantity (cattle & sheep) (m^3)	Quantity (pigs & poultry) (m^3)
		l	b	R	l x b x R	l x b x R
1				0.025		
2				0.025		
3				0.025		
4				0.025		
5				0.025		
6				0.025		
7				0.025		
8				0.025		

Rainfall entering unroofed rectangular tanks, unroofed middens and earth bank lagoons					
		l	b	R	l x b x R	l x b x R
1				0.025		
2				0.025		
3				0.025		
4				0.025		
5				0.025		

Rainfall entering unroofed above ground circular stores				
Area	Description	Radius (m)	Rainfall per week[1] (m)	Quantity (cattle & sheep) (m^3)	Quantity (pigs & poultry) (m^3)
		r	R	(r x r x 3.14 x R)	(r x r x 3.14 x R)
1			0.025		
2			0.025		
3			0.025		
4			0.025		
Total quantity of rainfall collected as slurry per week (m^3)				**(I)**	**(J)**

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

Worksheet K: Calculate the total quantity of clean and dirty water collected with slurry per week

1. Enter the dimensions of clean yards and/or roofs where rainfall drains to slurry tanks and multiply them by the rainfall per week (Table K1).
2. Enter the dimensions of areas where dirty water is produced and multiply them by the rainfall per week (Table K2).
3. Total the quantity of clean and dirty water collected with slurry produced by cattle and sheep and insert in Box K (Table K3). Transfer your answer to **Section 2.3, Box K on page 35**.
4. Total the quantity of clean and dirty water collected with slurry produced by pigs and poultry and insert in Box L (Table K3). Transfer your answer to **Section 2.3, Box L on page 35.**

Table K1 – Water from clean yards and roofs entering tanks						
Area	Description	Length (m)	Breadth (m)	Rainfall per week[1] (m)	Quantity (cattle & sheep) (m^3)	Quantity (pigs & poultry) (m^3)
		l	b	R	l x b x R	l x b x R
1				0.025		
2				0.025		
3				0.025		
4				0.025		
Table K1 – Total						

Table K2 – Surface run-off from open silos/other areas producing dirty water						
Area	Description	Length (m)	Breadth (m)	Rainfall per week[1] (m)	Quantity (cattle & sheep) (m^3)	Quantity (pigs & poultry) (m^3)
		l	b	R	l x b x R	l x b x R
1				0.025		
2				0.025		
3				0.025		
4				0.025		
5				0.025		
Table K2 – Total						

Table K3 – Washings (dirty water)					
				Volume (cattle & sheep) (m^3)	Volume (pigs & poultry) (m^3)
Dairy parlour washings[2] (m^3)	No. of cows ----------------	x	0.13		n/a
Building washings – cattle[5] (excludes parlour washings)	Insert actual quantity of water used per week				n/a
Building washings – poultry[3]	No. of batches --------- X Floor area -------- m^2	x	0.007	n/a	
Building washings – pigs[4]	No. of pigs moved out of pens/week ---------	x	0.02	n/a	
Table K3 – Total					
Total from Table K1 (clean water entering tanks)					
Total from Table K2 (dirty water entering tanks)					
Total quantity of clean and dirty water collected with slurry per week (m^3) (Table K1 + Table K2 + Table K3)				**(K)**	**(L)**

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

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

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

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

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

Worksheet M: Calculate the total quantity of separated solids from slurry per week

Only complete this table if you separate cattle or sheep slurry.
1. Enter the type of slurry separated (cattle and sheep only).
2. Enter the quantity of this slurry type produced per week. (Refer to **Worksheet G, page 29** for the relevant figure).
3. Multiply the quantity by the % reduction figure. The maximum volume reduction allowed is 20%.
4. Total quantity of separated slurry per week and insert in Box M. **Transfer your answer to Section 2.3, Box M on page 35.**

Slurry Type	Quantity of slurry separated per week		% reduction by separation		Reduction in volume
	m^3	x	%	=	m^3
		x		=	
		x		=	
		x		=	
		x		=	
Total quantity of separated solids per week (m^3)				=	**(M)**

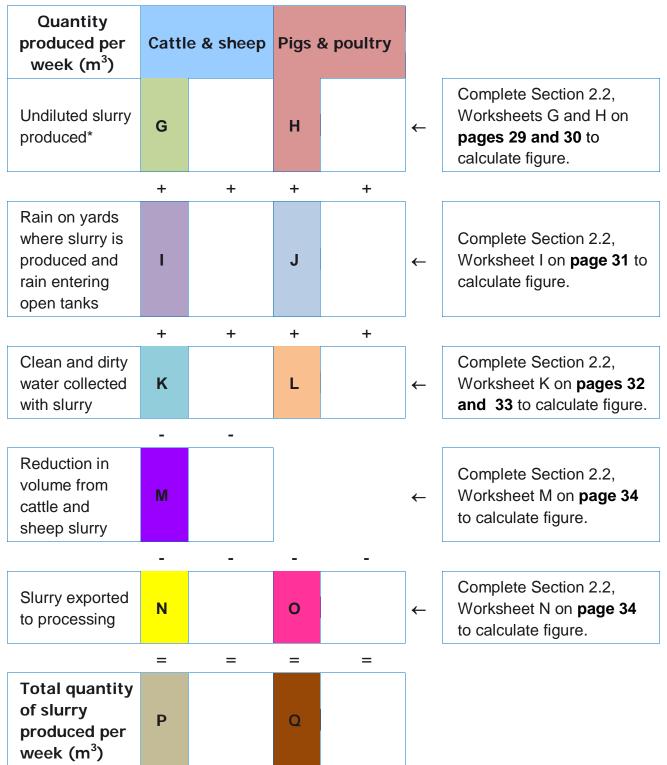### Worksheet N: Calculate the total volume of slurry exported to processing per week

1. Enter the type of slurry exported to processing.
2. Enter the quantity of slurry produced and exported over the winter period. Divide by 22 for cattle and sheep slurry, and 26 for pig and poultry slurry, to calculate the quantity exported per week.
3. Total the quantity produced by cattle and sheep and insert in Box N. Transfer your answer to **Section 2.3, Box N on page 35.**
4. Total the quantity produced by pigs and poultry and insert in Box O. Transfer your answer to **Section 2.3, Box O on page 35.**

Slurry Type	Quantity of slurry exported	÷22 or ÷ 26		Quantity of cattle & sheep slurry exported per week	Quantity of pig & poultry slurry exported per week
	m^3		=	m^3	m^3
		÷ 22 **or** ÷ 26	=		
		÷ 22 **or** ÷ 26	=		
		÷ 22 **or** ÷ 26	=		
		÷ 22 **or** ÷ 26	=		
		÷ 22 **or** ÷ 26	=		
Total quantity of slurry exported to processing per week (m^3)				**(N)**	**(O)**

Section 2.3 – Manure storage capacity calculation

Step 1: Volume of slurry produced per week

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

Quantity produced per week (m^3)	Cattle & sheep		Pigs & poultry			
Undiluted slurry produced*	G		H		←	Complete Section 2.2, Worksheets G and H on **pages 29 and 30** to calculate figure.
	+	+	+	+		
Rain on yards where slurry is produced and rain entering open tanks	I		J		←	Complete Section 2.2, Worksheet I on **page 31** to calculate figure.
	+	+	+	+		
Clean and dirty water collected with slurry	K		L		←	Complete Section 2.2, Worksheet K on **pages 32 and 33** to calculate figure.
	-	-				
Reduction in volume from cattle and sheep slurry	M				←	Complete Section 2.2, Worksheet M on **page 34** to calculate figure.
	-	-	-	-		
Slurry exported to processing	N		O		←	Complete Section 2.2, Worksheet N on **page 34** to calculate figure.
	=	=	=	=		
Total quantity of slurry produced per week (m^3)	P		Q			

* Remember you may be able to make allowances for slurry/manure produced from animals which are:-

- out-wintered; and/or
- on bedded accommodation.

See **Section 2.1, page 24** for additional information.

Worksheet R: Calculate the storage capacity of rectangular tanks, earth bank lagoons and above ground stores

1. Enter the dimensions of tanks, lagoons, and above ground stores and multiply them to determine the capacity. Include any off-farm storage you rent and keep a written record of your rental agreement.
2. Total the capacity for cattle and sheep and insert in Box R. Transfer your answer to **Section 2.3, Step 2, Box R on page 37.**
3. Total the capacity for pigs and poultry and insert in Box S. Transfer your answer to **Section 2.3, Step 2, Box S on page 37.**

Storage capacity of rectangular tanks, and concrete lagoons						
Area	Description	Length (m)	Breadth (m)	Adjusted depth (depth-free-board)* (m)	Capacity – cattle & sheep (m^3)	Capacity – pigs & poultry (m^3)
		l	b	h	l x b x h	l x b x h
1						
2						
3						
4						
5						
6						
7						
8						
Storage capacity of earth bank lagoons						
1						
2						
3						
4						

Storage capacity of above ground circular stores					
Area	Description	Radius (m)	Adjusted depth (depth-freeboard)* (m)	Capacity – cattle & sheep (m^3)	Capacity – pigs & poultry (m^3)
		r	h	r x r x 3.14 x h	r x r x 3.14 x h
1					
2					
3					
4					
Total capacity of tanks, lagoons and stores (m^3)				**(R)**	**(S)**

* Mandatory freeboard allowances are at least 750 mm for earth bank lagoons and 300 mm for all other slurry stores. This is not a legal requirement for facilities completed before 1 December 2003 (unless they have been substantially modified).

Step 2: Tank capacity

To calculate the information required for Step 2, complete **worksheet R on page 36** and transfer your answer to the relevant box(es) below.

	Cattle & sheep		Pigs & poultry		
Storage capacity of tanks, stores and lagoons on the farm (m^3)	R		S		Transfer answer from Worksheet R, on **page 36.**

Step 3: Weeks storage Capacity

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

	Cattle & sheep		Pigs & poultry		
Storage capacity of tanks, stores and lagoons on the farm	R		S		Transfer answer, from Step 2 above.
		÷		÷	
Total quantity of slurry and dirty water to be collected per week (m^3)	P		Q		Transfer answer, from Step 1 on **page 35**
		=		=	
Weeks storage capacity	T		U		Do you have enough storage? See table below.

Do you have enough storage?

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

Section 2.4 – Poultry litter production and storage worksheet and calculation

The quantity of poultry litter produced which is stored in a midden or field heap does not need to be taken into account when calculating a farm's slurry storage capacity provided that the conditions outlined in **Section 8.3** of the Nitrates Action Programme 2015-2018 and Phosphorus Guidance Booklet are met.

Complete the following if you wish to calculate how much storage capacity you require for poultry litter.

Worksheet V: Quantity of poultry litter produced per week

1.   Enter the average number of birds on the unit at any one time.
2.   Multiply the average number by the quantity of manure produced per 1,000 birds per week.
3.   Total the quantity of litter produced and insert in Box V. Transfer your answer to **Table 2 Box V on page 39.**

Livestock Type	Average number on the unit		Quantity of litter produced per week		Total quantity of litter produced per week
	No.	x	t	=	t
1,000 broilers and		x	0.41	=	
1,000 broiler breeders		x	0.38	=	
1,000 replacement		x	0.39	=	
1,000 turkeys (male) and litter		x	1.10	=	
1,000 turkeys (female) and litter		x	0.53	=	
1,000 ducks		x	2.02	=	
Total quantity of poultry litter produced per week (t)				=	**(V)**

Worksheet W: Calculate the total quantity of poultry litter exported to processing per week

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

Manure Type	Quantity of litter exported over the winter period			Total quantity of poultry litter exported per week
	t	÷ 26	=	t
		÷ 26	=	
		÷ 26	=	
		÷ 26	=	
Total quantity of poultry litter exported to processing per week (t)			=	**(W)**

Table 2: Calculate the quantity of poultry litter requiring storage

Total quantity of poultry litter produced per week (t)	**V**		←	Transfer answer from, Worksheet V, **page 38**.
	-	**-**		
Total quantity of poultry litter exported to process per week (t)	**W**		←	Transfer answer from, Worksheet W, above.
	=	**=**		
Total quantity of poultry litter requiring storage per week (t) **(V – W)**	**X**			

Note: poultry litter cannot be stored in a field heap except where it has been authorised by NIEA. For further information on the authorisation process view the NIEA website www.daera-ni.gov.uk/articles/nitrates-directive or contact NIEA at telephone number 028 9262 3184.

Section 3 - Calculating nitrogen (N) applications for grassland

Only complete this table if you have grassland. In contrast to other crops, N from livestock manures does not need to be taken into consideration (an allowance for their use is already made in the calculation). N from any other organic manures used must be included.

Column (A)	Enter the total area of grassland
Column (B)	Enter the maximum N limit for your grassland area.
Column (C)	Enter the type(s) of organic manure, **not including livestock manure,** to be applied.
Column (D)	Enter in the amount of this organic manure to be applied to the grassland area.
Column (E)	Enter the available N content of these organic manures (per m^3 or tonne of manure) by calculating 40% of the total N content (i.e. multiplying by 0.4) (**Annex G** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet; total N content should be provided by producer or waste transfer note/copy of exemption from waste management licensing). For example, sewage sludge with a total N content of 3 kg N per m^3 has 1.2 kg available N per m^3.
Column (F)	Multiply columns (D) and (E) to give total amount of available N to be applied in organic manures.
Column (G)	Enter the type(s) of chemical fertiliser to be applied on grassland during the year.
Column (H)	Enter the total amount of chemical fertiliser product to be applied for each fertiliser type.
Column (I)	Calculate the amount of N to be applied for all types of chemical fertiliser. For example if 25,000 kg of 27:0:0 is to be applied, kg of N to be applied = 27 x 25,000 ÷ 100 = 6,750 kg of N.
Column (J)	Add column (F) and (I) to give total N to be applied.
Column (K)	Divide total in (J) by whole area of grassland (A). Application to be less than requirement in column (B).

Nitrogen (N) application to grassland worksheet										
Crop details		Organic manure excluding livestock manures (for example sewage sludge)				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg) Total (J) ÷ (A)
Area of grassland on the farm (ha)	N limit for grassland (kg per ha)	Type of manure	Total amount of manure to be applied to whole area of grass (m^3 or t)	Amount of available N (kg per m^3 or t) Annex G*	Total amount of available N to be applied to whole area of grass (kg) (D) x (E)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to whole area (kg)	Total amount of N from fertiliser to be applied to whole area (kg)	Total amount of N to be applied to whole area (kg) (F) + (I)	
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
	Dairy:- 272 Other livestock:- 222									
						Total				

* refers to **Annex G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Nitrogen (N) application to grassland worksheet										
Crop details		Organic manure excluding livestock manures (for example sewage sludge)				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg) Total (J) ÷ (A)
Area of grassland on the farm (ha)	N limit for grassland (kg per ha)	Type of manure	Total amount of manure to be applied to whole area of grass (m^3 or t)	Amount of available N (kg per m^3 or t) Annex G*	Total amount of available N to be applied to whole area of grass (kg) (D) x (E)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to whole area (kg)	Total amount of N from fertiliser to be applied to whole area (kg)	Total amount of N to be applied to whole area (kg) (F) + (I)	
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
	Dairy:- 272 Other livestock:- 222									
								Total		

* refers to **Annex G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Nitrogen (N) application to grassland worksheet										
Crop details		Organic manure excluding livestock manures (for example sewage sludge)				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg) Total (J) ÷ (A)
Area of grassland on the farm (ha)	N limit for grassland (kg per ha)	Type of manure	Total amount of manure to be applied to whole area of grass (m³ or t)	Amount of available N (kg per m³ or t) Annex G*	Total amount of available N to be applied to whole area of grass (kg) (D) x (E)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to whole area (kg)	Total amount of N from fertiliser to be applied to whole area (kg)	Total amount of N to be applied to whole area (kg) (F) + (I)	
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)
	Dairy:- 272 Other livestock:- 222									
							Total			

* refers to **Annex G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Section 4 - Calculating nitrogen (N) applications for arable crops
(excluding N-max crops and grass)

Only complete this table if you grow crops other than grass or winter/spring wheat, barley or oats. In contrast to grassland **all** organic manures must be taken into consideration, including livestock manures.

Column (A)	Enter crop type from **Annex H** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.
Column (B)	For each crop area on the farm with the same cropping history enter the soil nitrogen supply (SNS) index as determined in **Annex H** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.
Column (C)	Enter the area to be grown for each crop type with the same cropping history.
Column (D)	Enter the maximum N limit for each crop area (**Annex H** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet) taking into consideration the SNS index stated in column B.
Column (E)	Enter the type(s) of organic manure, **including livestock manure,** to be applied.
Column (F)	Enter in the amount of manure to be applied.
Column (G)	Enter the available N content (per m^3 or tonne of manure) of the manure to be applied (**Annex G** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet).
Column (H)	Multiply columns (E) and (F) to give total amount of available N to be applied in organic manures.
Column (I)	Enter the type(s) of chemical fertiliser to be applied.
Column (J)	Enter the total amount of chemical fertiliser product to be applied for each fertiliser type.
Column (K)	Total up the amount of N to be applied for all types of chemical fertiliser applied. For example, if the type of fertiliser to be applied was 27:0:0, this contains 27% N. If 1,600 kg is to be applied per ha, then the amount of N would be 27 x 1,600 ÷ 100 = 432 kg of N.
Column (L)	Add column (H) and (K) to give total N to be applied to the area.
Column (M)	Divide total in (L) by area of crop I. Application to be less than requirement in column (D).

Nitrogen (N) applications to arable crops (excluding N-max crops and grass) worksheet												
Crop details				Organic manure including livestock manures				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg)
Crop	SNS	Total area of crop (ha)	Crop N require-ment (kg per ha) Annex H*	Type of manure	Total amount of manure to be applied to field(s) (m³ or t)	Amount of available N (kg per m³ or t) Annex G*	Total amount of available N to be applied to field(s) (kg) (F) x (G)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to field(s) (kg)	Total amount of N from fertiliser to be applied to field(s) (kg)	Total amount of N to be applied to field(s) (kg) (H) + (K)	Total (L) ÷ I
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)

* refers to **Annexes H and G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Nitrogen (N) applications to arable crops (excluding N-max crops and grass) worksheet												
Crop details				Organic manure including livestock manures				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg)
Crop	SNS	Total area of crop (ha)	Crop N require-ment (kg per ha)	Type of manure	Total amount of manure to be applied to field(s) (m³ or t)	Amount of available N (kg per m³ or t)	Total amount of available N to be applied to field(s) (kg)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to field(s) (kg)	Total amount of N from fertiliser to be applied to field(s) (kg)	Total amount of N to be applied to field(s) (kg)	Total (L) ÷ I
			Annex H*			Annex G*	(F) x (G)				(H) + (K)	
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)

* refers to **Annexes H and G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

46

Section 4 - Calculating nitrogen (N) applications for arable crops
(excluding N-max crops and grass)

Nitrogen (N) applications to arable crops (excluding N-max crops and grass) worksheet												
Crop details				Organic manure including livestock manures				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg)
Crop	SNS	Total area of crop (ha)	Crop N require-ment (kg per ha) Annex H*	Type of manure	Total amount of manure to be applied to field(s) (m³ or t)	Amount of available N (kg per m³ or t) Annex G*	Total amount of available N to be applied to field(s) (kg) (F) x (G)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to field(s) (kg)	Total amount of N from fertiliser to be applied to field(s) (kg)	Total amount of N to be applied to field(s) (kg) (H) + (K)	Total (L) ÷ I
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)	(M)

* refers to **Annexes H and G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Refer to Section 6.2 of the NAP 2015–2018 and Phosphorus Regulations Guidance Booklet for additional information

Only complete this table if you grow winter/spring wheat, barley or oats. In contrast to grassland **all** organic manures must be taken into consideration including livestock manures.

Column (A)	Enter crop type – either winter/spring wheat, barley and/or oats.
Column (B)	Enter the total area for each crop type to be grown.
Column (C)	Enter the maximum N limit for each crop area as per the N-max limit for crop requirement (**Annex I** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet) including any adjustment for yield.
Column (D)	Enter the type(s) of organic manure, **including livestock manure,** to be applied.
Column (E)	Enter in the amount of manure to be applied.
Column (F)	Enter the available N content (per m^3 or tonne of manure) of the manure to be applied (**Annex G** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet).
Column (G)	Multiply columns (E) and (F) to give total amount of available N to be applied in organic manures.
Column (H)	Enter the type(s) of chemical fertiliser to be applied.
Column (I)	Enter the total amount of chemical fertiliser product to be applied for each fertiliser type(s).
Column (J)	Total up the amount of N to be applied for all type(s) of chemical fertiliser applied. For example if 1,600 kg of 27:0:0 is to be applied, kg of N to be applied = 27 x 1,600 ÷ 100 = 432 kg of N.
Column (K)	Add column (G) and (J) to give total N to be applied to the area.
Column (L)	Divide total in (K) by area of crop (B). Application to be less than requirement in column (C).

Nitrogen (N) applications to N-max crops worksheet											
Crop details			Organic manure including livestock manures				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg)
Crop	Total area of crop (ha)	Crop N-max requirement (kg per ha) Annex I*	Type of manure	Total amount of manure to be applied to field(s) (m³ or t)	Amount of available N (kg per m³ or t) Annex G*	Total amount of available N to be applied to field(s) (kg) (E) x (F)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to field(s) (kg)	Total amount of N from fertiliser to be applied to field(s) (kg)	Total amount of N to be applied to field(s) (kg) (G) + (J)	Total (K) ÷ (B)
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)

* refers to **Annexes I and G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

49

Nitrogen (N) applications to N-max crops worksheet											
Crop details			Organic manure including livestock manures				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg)
Crop	Total area of crop (ha)	Crop N-max requirement (kg per ha) Annex I *	Type of manure	Total amount of manure to be applied to field(s) (m³ or t)	Amount of available N (kg per m³ or t) Annex G*	Total amount of available N to be applied to field(s) (kg) (E) x (F)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to field(s) (kg)	Total amount of N from fertiliser to be applied to field(s) (kg)	Total amount of N to be applied to field(s) (kg) (G) + (J)	Total (K) ÷ (B)
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)

* refers to **Annexes I and G** in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Nitrogen (N) applications to N-max crops worksheet											
Crop details			Organic manure including livestock manures				Chemical N fertiliser			Organic and chemical N fertiliser	Total N to be applied per ha (kg)
Crop	Total area of crop (ha)	Crop N-max requirement (kg per ha) Annex I*	Type of manure	Total amount of manure to be applied to field(s) (m³ or t)	Amount of available N (kg per m³ or t) Annex G*	Total amount of available N to be applied to field(s) (kg) (E) x (F)	Type of N fertiliser to be applied	Total amount of fertiliser product to be applied to field(s) (kg)	Total amount of N from fertiliser to be applied to field(s) (kg)	Total amount of N to be applied to field(s) (kg) (G) + (J)	Total (K) ÷ (B)
(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)

* refers to **Annexes I and G** in the NAP 2015–2018 and Phosphorus Regulations Guidance Booklet.

Section 6 - Calculating phosphate (P_2O_5) applications for grassland and all other crops

Only complete this table if you are applying chemical phosphate (P_2O_5) fertiliser, sewage sludge, organic manures applied to land under a Waste Management licence or exemption (e.g. abattoir waste and some anaerobic digestates, or, from 2017, P-rich manures.

1. All organic manures, **including livestock manures**, must b e taken into consideration.
2. The values for available P_2O_5 content of organic manures vary depending on soil phosphorus (P) indes and crop type.
3. The P_2O_5 content of chemical fertilisers is taken to be 100% available.
4. When applying nutrients to grass or crops remember to consider all nutrients such as potash and sulphur.

Column (A)	Enter the crop to be grown. A list of the main crops and their requirements are listed in **Annex J** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.
Column (B)	Enter area of field.
Column (C)	Enter soil P index from soil analysis if available. (If not available then assume an index of 2+ for grass or 2 for all other crops).
Column (D)	According to the soil P index from soil analysis results enter the P_2O_5 requirement for the crop in kg per ha from **Annex J** of the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.
Column (E)	Enter the type(s) of organic manure, **including livestock manure,** to be applied.
Column (F)	Enter in the amount of manure to be applied in m^3 or tonnes.
Column (G)	Enter the available P_2O_5 content (per m^3 or tonne of manure) of the manure to be applied (**Annex G** of the NAP 2015–2018 and Phosphorus Regulations Guidance Booklet).
Column (H)	Multiply columns (F) and (G) to give total amount of available P_2O_5 to be applied in organic manures.
Column (I)	Enter the type of chemical fertiliser to be applied.
Column (J)	Enter the amount of chemical fertiliser to be applied per ha.
Column (K)	Enter the amount of chemical P_2O_5 to be applied. For example type of fertiliser to be applied was 27:6:12, this contains 6% P_2O_5. If 300 kg is to be applied per ha then the amount of P_2O_5 would be 6 x 300 ÷ 100 = 18 kg per ha.
Column (L)	Add column (H) and (K) to give total amount of available P_2O_5 to be applied per ha and divide by the area of the field (B) to calculate the application rate per ha.

Phosphate (P$_2$O$_5$) application worksheet											
Grass/crop details					**Organic manure (including livestock manures)**				**Chemical (P$_2$O$_5$) fertiliser**		**Total P$_2$O$_5$ to be applied per ha (kg)** ((H) + (K)) ÷ (B)
Field No.	Crop	Area of crop (ha)	Soil P index (from analysis)	P$_2$O$_5$ requirement for crop according to soil P index (kg per ha) Annex J*	Type of organic manure to be applied Annex G*	Total amount of organic manure to be applied (m^3 or t)	Available P$_2$O$_5$ content of organic manure to be applied (kg per m^3 or t) Annex G*	Total amount of available P$_2$O$_5$ supplied to crop in organic manure (kg) (F) x (G)	Type of fertiliser product to be applied	Total amount of fertiliser product to be applied (kg)	Total amount of P$_2$O$_5$ from fertiliser to be applied (kg) (I) x (J)	
	(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)

* refers to Annexes J and G in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Phosphate (P$_2$O$_5$) application worksheet											
Grass/crop details					Organic manure (including livestock manures)				Chemical (P$_2$O$_5$) fertiliser			Total P$_2$O$_5$ to be applied per ha (kg) ((H) + (K)) ÷ (B)
Field No.	Crop	Area of crop (ha)	Soil P index (from analysis)	P$_2$O$_5$ require-ment for crop according to soil P index kg per ha Annex J*	Type of organic manure to be applied Annex G*	Total amount of organic manure to be applied (m^3 or t)	Available P$_2$O$_5$ content of organic manure to be applied (kg per m^3 or t) Annex G*	Total amount of available P$_2$O$_5$ supplied to crop in organic manure (kg) (F) x (G)	Type of fertiliser product to be applied	Total amount of fertiliser product to be applied (kg)	Total amount of P$_2$O$_5$ from fertiliser to be applied (kg) (I) x (J)	
	(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)

* refers to Annexes J and G in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

54

Phosphate (P_2O_5) application worksheet											
Grass/crop details					Organic manure (including livestock manures)				Chemical (P_2O_5) fertiliser			Total P_2O_5 to be applied per ha (kg)
Field No.	Crop	Area of crop (ha)	Soil P index (from analysis)	P_2O_5 require-ment for crop according to soil P index kg per ha Annex J*	Type of organic manure to be applied Annex G*	Total amount of organic manure to be applied (m^3 or t)	Available P_2O_5 content of organic manure to be applied (kg per m^3 or t) Annex G*	Total amount of available P_2O_5 supplied to crop in organic manure (kg) (F) x (G)	Type of fertiliser product to be applied	Total amount of fertiliser product to be applied (kg)	Total amount of P_2O_5 from fertiliser to be applied (kg) (I) x (J)	((H) + (K)) ÷ (B)
	(A)	(B)	I	(D)	(E)	(F)	(G)	(H)	(I)	(J)	(K)	(L)

* refers to Annexes J and G in the NAP 2015-2018 and Phosphorus Regulations Guidance Booklet.

Northern Ireland Environment Agency (NIEA)

Water Management Unit, 17 Antrim Road, Lisburn BT28 3AL – **www.daera-ni.gov.uk/northern-ireland-environment-agency**
Useful NIEA telephone numbers

Agriculture Regulation Team:- Nitrates Action Programme, Nitrates Derogations, Phosphorus Regulations and Field Storage of Poultry Litter.	**028 9262 3184**
Silage and Slurry Issues:- Contact NIEA before planning to substantially alter any existing storage facility or commission new silos or slurry tanks.	**028 9262 3190**
Ground Water Authorisations:- (Authorisation for disposal of spent sheep dip).	**028 9262 3279**
Applying Sewage Sludge to Land	**028 9263 3445**
Registration of Waste Carriers	**028 9056 9360**
Simple Waste Management Exemptions	**028 9056 9358**
Other Waste Management Exemptions	**028 9056 9358**
Hazardous Waste Queries	**028 9056 9710**
Pollution Prevention and Control (PPC) licensing	**028 9056 9299**
24hr Pollution Hotline Number **Freephone**	**0800 80 70 60**

Department of Agriculture, Environment and Rural Affairs (DAERA)

Useful DAERA telephone numbers (Note:- DAERA 0300 numbers are charged at local rate)

Environment Awareness:- Agri-environment scheme information. Countryside Management advice including – Cross-Compliance, Nitrates Directive, Codes of Good Agriculture Practice, Farm Waste Management, Uncultivated Land Regulations and Field Boundary Removals.	**0300 200 7842**
Education and Training:- The College of Agriculture, Food and Rural Enterprise offers training on topics including Cross-Compliance, Nitrates and Nutrient Management Planning. (www.cafre.ac.uk).	**0300 200 7841**
DAERA Corporate Services:- DAERA Headquarters, Press Office, information services and systems, human resources and facilities management.	**0300 200 7850**
DAERA Animal By-Products Section	**028 9052 5275**
Textphone:- For people with hearing difficulties.	**0300 200 7851**
Calls from non-UK numbers or networks/international calls	**+44 (0)28 9049 5780**
A list of DAERA contact numbers can be obtained by visiting the Contact Us Section of the DAERA Website:- www.daera-ni.gov.uk/	

DAERA Direct Offices Public office opening hours are 9.00 am–4.00 pm each working day

Location and e-mail Address	Postal Address
Armagh **daeradirect.armagh@daera-ni.gov.uk**	Atek Building Edenaveys Industrial Estate Newry Road Edenaveys ARMAGH BT60 1NF
Ballymena **daeradirect.ballymena@daera-ni.gov.uk**	Academy House 121a Broughshane Street Town Parks BALLYMENA BT43 6HY
Coleraine **daeradirect.coleraine@daera-ni.gov.uk**	Crown Buildings Artillery Road Millburn COLERAINE BT52 2AJ
Downpatrick **daeradirect.downpatrick@daera-ni.gov.uk**	Rathkeltair House Market Street Demesne of Down Acre DOWNPATRICK BT30 6LZ
Dungannon **daeradirect.dungannon@daera-ni.gov.uk**	Crown Buildings Thomas Street Drumcoo DUNGANNON BT70 1HR
Enniskillen **daeradirect.enniskillen@daera-ni.gov.uk**	Inishkeen House Killyhevlin Industrial Estate Killyhevlin ENNISKILLEN BT74 4EJ
Londonderry **daeradirect.londonderry@daera-ni.gov.uk**	Crown Buildings Asylum Road Edenballymore LONDONDERRY BT48 7EA
Magherafelt **daeradirect.magherafelt@daera-ni.gov.uk**	Units 36 - 38 Meadowlane Shopping Centre Moneymore Road Townparks of Magherafelt MAGHERAFELT BT45 6PR
Mallusk **daeradirect.mallusk@daera-ni.gov.uk**	Castleton House 15 Trench Road Grange of Mallusk Mallusk NEWTOWNABBEY BT36 4TY
Newry **daeradirect.newry@daera-ni.gov.uk**	Glenree House Unit 2, Springhill Road Carnbane Industrial Estate Carnbane NEWRY BT35 6EF
Newtownards **daeradirect.newtownards@daera-ni.gov.uk**	Sketrick House 16 Jubilee Road Corporation South NEWTOWNARDS BT23 4YH
Omagh **daeradirect.omagh@daera-ni.gov.uk**	Sperrin House Sedan Avenue Lisnamallard OMAGH BT79 7AQ

Fertiliser Application

Area

1 hectare (ha) = 10,000 square metres (m^2)
1 hectare = 2.47 acres
1 acre = 0.405 hectares

Volumes

1 cubic metre (m^3) = 1,000 litres (l)
1 cubic metre = 220 gallons (gal)
1 cubic metre is assumed to weigh 1 tonne (t)
1 litre = 0.22 gallons
1 gallon = 0.0045 m^3 or 4.55 litres
1,000 gallons = 4,545 kilograms (4.5 tonnes)

Weight

1 kilogram (kg) = 2.2 pounds (lbs)
1 pound = 0.45 kilograms
1 tonne = 1,000 kilograms
1 metric tonne = 0.98 imperial ton

Application rates

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

Gallons per acre to m^3 per hectare (approx)

Gal per ac	90	500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500
m^3 per ha	1	5.5	11	17	22	28	33	39	44	50

Fertilisers

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

Fertiliser bags/acre to kilogram fertiliser product/hectare

1 bag fertiliser = 50 kilograms (kg)
1 bag per acre (ac) = 2.5 bags per hectare (ha) (1 acre = approx 2.5 hectares) (1 x 2.5)
2.5 bags per hectare x 50 kilograms = 125 kilograms fertiliser product per hectare applied

Kilogram fertiliser product applied to kilogram fertiliser nutrient applied $N.P_2O_5.K_2O$

Kilogram product applied x % $N.P_2O_5.K_2O$ in the bag.

Example:-

1 bag 25.5.5 applied per acre applied (1 bag per acre = 125 kilogram per hectare product)
25% of the bag is N, 5% is P_2O_5 and 5% is K_2O.

Kilogram N = 25% x 125 kilograms = 31.25 kilograms
Kilogram P_2O_5 = 5% x 125 kilograms = 6.25 kilograms
Kilogram K_2O = 5% x 125 kilograms = 6.25 kilograms

Length

Feet	1	2	3	4	5	10	15	20	25	30	35	40	45	50
Metres	0.3	0.61	0.91	1.22	1.52	3.05	4.57	6.1	7.62	9.14	10.67	12.19	13.72	15.24

Notes:-

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

Typical Annual NAP and Phosphorus Regulations Calendar

Date	Activity
31 January	Deadline for:- • Submission of records to NIEA of any exports of organic manure for the previous calendar year.
Midnight 31 January	End of closed period for spreading all fertiliser and manure.
1 March	Deadline for derogated farms for:- • Submission of derogation application to NIEA. • Completion of fertilisation plan (to be kept on farm for inspection). • Submission of fertilisation account, for the previous calendar year, to NIEA.
30 June	Completion date for records for the period 1 January to 31 December the previous year.
Autumn	After harvesting any crops:- • the stubble of the harvested crop must remain in the land; or • the land sown with a crop which will take up N from the soil, or where soil or weather conditions prevent a subsequent crop from being sown, appropriate measures put in place to limit soil erosion. until 15 January next year.
Midnight 15 September	Start of closed period for spreading:- • Chemical N and phosphate fertiliser to grassland. • Any chemical fertiliser to any land for crops other than grass unless there is a demonstrable crop requirement.
Midnight 15 October	Start of closed period for spreading:- • Organic manure, apart from farmyard manure and dirty water, to any land. • All types of organic manure (including farmyard manure and dirty water) to a derogated holding, if the fertilisation plan indicates a proposal to disturb the soil as part of grass cultivation.
Midnight 31 October	Start of closed period for spreading farmyard manure to any land.

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