

Guidance for Farmers in Nitrate Vulnerable Zones

The livestock manure N farm limit

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The guidance in this series of leaflets is designed to help farmers be compliant with The Nitrate Pollution Prevention Regulations 2008 (SI2349 September 2008). The guidance has been produced in association with the Environment Agency, who is responsible for assessing farmers' compliance with these Regulations.

The livestock manure N farm limit

Part 3 of the Regulations establishes a limit on the amount of livestock manure that can be applied to the land on your farm (whether by spreading or directly by grazing animals). The rules relating to this limit are summarised below.

YOU MUST:

- **Ensure that the total loading of nitrogen in livestock manure to your farm does not exceed a loading limit of 170 kg N per hectare per year**
- **Follow a defined process when calculating your compliance with this limit**
- **Keep a record of your calculation plus some other annual records to demonstrate your compliance**

If you are in an NVZ originally designated in 1996 or 2002, you will need to comply with this limit from 1 January 2009. If, however, you are in an NVZ newly designated in the 2008 Regulations, you have until 1 January 2010.

The boxes below describe the limit in more detail and the following paragraphs provide further explanation. A step-by-step guide is provided at the back of this Leaflet to help you calculate and record your compliance with this limit.

1. The livestock manure N farm limit

YOU MUST ensure that, in any year beginning 1 January, the total amount of nitrogen in livestock manure that is applied to your farm, whether directly by grazing animals or by spreading, does not exceed 170 kg multiplied by the area of the farm (in hectares).

This loading limit only applies to livestock manure. The nitrogen from manufactured nitrogen fertiliser, and any other organic manure that does not originate from livestock (e.g. sewage sludge, compost), does not count towards the limit.

If it is likely that you will exceed the 170kg N/ha/yr limit, then you should make arrangements to:

- reduce the amount of nitrogen in livestock manure on your farm either by sending it off your farm or by reducing your livestock numbers; and/or
- increase the area of land under your control.

If part of your farm is outside an NVZ, you will still need to keep the necessary records (see Section 3) and you should alter how you calculate your compliance with the limit by:

- applying the 170 kg N/ha/yr limit to the area of your farm within an NVZ; and
- applying the advice contained within the Code of Good Agricultural Practice, which establishes a limit of 250 kg N/ha/yr, to the area of your farm outside an NVZ.

The livestock manure N farm limit

Important note:

Defra's request to the European Commission (EC) for a derogation from the 170 kg N/ha limit has been approved. A higher limit of 250 kg N/ha per year will be allowed on eligible farms.

Eligible farms are those with grazing livestock (cattle, sheep, deer and goats only) and with 80% or more of their agricultural area as grassland. Farms granted a derogation will also have to comply with a number of further conditions, including:

- *Livestock manures may not be spread on grassland that is to be cultivated in the autumn;*
- *Temporary grassland on sandy soils must only be cultivated in the spring;*
- *Ploughed grass must be followed by a crop with a high nitrogen requirement;*
- *The crop rotation must not include leguminous or other plants fixing atmospheric nitrogen. This will not apply to clover in grassland with less than 50% clover or to other legumes that are under-sown with grass;*
- *The results of nitrogen and phosphorus analysis in soil shall be available for each farm benefiting from a derogation. Sampling and analysis must be carried out at least once every four years; and*
- *A phosphorus fertilisation plan must be prepared for each field.*

Farmers wishing to use a derogation will need to send an application to the Environment Agency every year. Details of how to apply and the conditions that must be met will be explained in a Guidance Leaflet for farmers that will be published later in 2009. In addition a series of information workshops will be organised to support those farmers considering applying for a derogation.

2. Calculating your compliance

The Regulations set out the factors you must take into account when calculating your compliance with the livestock manure N farm limit.

When determining the amount of nitrogen produced by the livestock kept on your farm YOU MUST use the standard values provided in Tables 1 – 4 of Leaflet 3.

Alternatively, in the case of permanently housed pigs and poultry, you may use the following instead of the standard values:

- values calculated using the ENCASH computer software; or
- values determined by sampling and analysis of the manure (only permitted if your housing system only produces solid manure).

YOU MUST take into account the total nitrogen content of any livestock manure that is brought onto (imported) or sent off (exported) your farm.

When determining the amount of nitrogen contained within the imported / exported livestock manure YOU MUST use either:

- the standard values provided in Table 7, Leaflet 3; or
- sampling and analysis of the manure.

When calculating the area of your farm YOU MUST exclude areas of surface water, any hard-standing, buildings, roads or woodland unless the woodland is used for grazing.

The livestock manure N farm limit

If you are in an NVZ originally designated in 1996 or 2002, you will need to complete and record this calculation by 30 April 2010 (i.e. the calculation will relate to the previous calendar year, 2009). However, if you are in an NVZ newly designated by the 2008 Regulations, you have until 30 April 2011 (i.e. the calculation will relate to the previous calendar year, 2010).

It is recommended that you plan for the year ahead. If you only do the calculation at the end of the year you may find that you have breached the limit and cannot take any remedial action.

You may only need to do the compliance calculation once, although it will need updating if circumstances change on your farm, for example, if you:

- increase the number of livestock on your farm;
- reduce the area of your farm; or
- alter the amount of livestock manure that is imported or exported.

To help with your calculation, you can use the step-by-step guide provided at the back of this Leaflet (Annex 1) or the PLANET software. The Environment Agency will accept this as a valid record of your calculation, although other methods and software may also be acceptable.

Other important points to note when calculating compliance with the livestock manure N farm limit:

- Where it is acceptable for you to analyse the nitrogen content of manure, instead of relying on the standard values, you must use the sampling protocol provided in Leaflet 3.
- To convert the results of sampling and analysis into a value for annual manure N production, you will need to estimate the total weight of the manure that is produced on the farm during the year. This can be done by using a weighbridge to weigh a typical trailer-load the manure, then counting the total number of trailer-loads produced during the year.
- ENCASH will calculate a nitrogen production value for a livestock type based on the specific diets and production system used on your farm. See 'further information' for details of how to obtain a copy of this software.
- When calculating the area of your farm you should include all areas you farm which are within an NVZ including:
 - rented land that is under your control during the year;
 - rough grazing;
 - land under management agreements (such as Environmentally Sensitive Areas, Environmental Stewardship); and
 - an appropriate proportion of any common land that you use.
- Adjust your calculation if part of your farm is outside an NVZ. Step 2 of the step-by-step guide (Annex 1) provides further information on how to adjust your calculation appropriately.

3. Record keeping

The Environment Agency will check your compliance with the limit described in this Leaflet by checking that you have correctly calculated the amount of nitrogen produced by the livestock kept on your farm and by inspecting your annual records relating to livestock numbers, imports/exports etc.

The Regulations require that you keep the following records.

By 30 April each year, YOU MUST record the following information relating to the previous calendar year:

- the numbers of livestock kept on your farm;
- your calculation of the amount of nitrogen produced by these animals;
- a copy of your sampling and analysis and/or ENCASH results;
- any imports or exports of livestock manure; and
- the area of your farm.

Note – A full description of the required records required by the Regulations is provided in the paragraphs below.

If you are in an NVZ originally designated in 1996 or 2002, you will need to start keeping these records from 1 January 2009. If, however, you are in an NVZ newly designated by the 2008 Regulations, you will need to start keeping these records from 1 January 2010. You will need to make sure that the following records, relating to the previous calendar year, are available for inspection from 30 April of each year:

1. Records of livestock numbers kept on your farm during the previous calendar year

Your records must identify into which of the livestock categories listed in Leaflet 3 the animals kept on your farm fall. Therefore you will probably need to keep details of either their gender, age and/or weight. You will also need to know how long these animals were kept on your farm during the previous calendar year.

You only need to keep records of animals kept on your farm which fall within any of the livestock categories listed in Leaflet 3. It is not necessary to keep records of other types of animals.

2. Your calculation of the amount of nitrogen produced by these animals

If you complete Step 3 in the template provided at the back of this Leaflet or use the PLANET software, the Environment Agency will accept this as a valid record of your calculation.

3. Records of imports/exports of livestock manure

If you bring livestock manure onto your farm, or send it off, you will need to keep the following records:

- the type and amount of livestock manure;
- the total nitrogen content of that manure, either from standard figures (Table 7, Leaflet 3) or sampling and analysis;
- the date it was brought onto/sent off your farm; and
- the name and address of the supplier/recipient.

You will also need to keep details of a contingency plan to be used if an agreement to send the manure off your farm fails.

4. A copy of your sampling and analysis and/or ENCASH results (if used)

5. The area of your farm (hectares)

As with all records required by the Regulations, you must keep the above for a minimum of five years.

Notes:

The records described at points 1 and 2 above are almost identical to those required in relation to the minimum manure storage capacity requirements (Leaflet 4), although they relate to a different period of the year. You should be able to keep similar records to meet the record keeping requirements of both sets of rules.

The annual records of livestock numbers, and of imports and exports, can be kept using any existing record-keeping system that you may have in place on your farm provided it is adapted to contain the relevant information required by the Regulations.

4. Further information

- A helpline has been established to assist with the interpretation of the NVZ rules. The helpline number is **0845 345 1302** (8am – 6pm). The helpline is run by Momenta on behalf of Defra.
- A free copy of the PLANET or ENCASH software can be obtained by going to www.planet4farmers.co.uk or by telephoning the PLANET Helpline on **08456 023864**.
- Protecting our Water, Soil and Air: A Code of Good Agricultural Practice for farmers, growers and land managers (available on www.defra.gov.uk).
- Further advice to understand and interpret the rules in specific circumstances is given in 'Nitrate Vulnerable Zones (NVZs) – Questions and answers'. This can be found on the Environment Agency website.

The livestock manure N farm limit – Annex 1

Step-by-step Guide for Calculating Compliance with the Livestock Manure N Farm Limit

The six steps you will need to follow are:

- Step 1** Collect your information
- Step 2** Calculate the livestock manure N capacity of your farm
- Step 3** Calculate the amount of manure N produced by the livestock kept on your farm
- Step 4** Calculate the amount of livestock manure N that is imported/exported on/off your farm
- Step 5** Calculate the total loading of livestock manure N on your farm
- Step 6** Compare the livestock manure N loading with the livestock manure N capacity of your farm

Step 1 Collect your information

You will need to have available the following basic information:

- a. Leaflet 3 – specifically the “total N produced by livestock type” figures from Tables 1–4;
- b. The results of sampling and analysis or the outputs from ENCASH, if applicable;
- c. Records of livestock numbers kept on your farm during the previous calendar year;
- d. Records of any imports/exports of livestock manure; and
- e. The area (ha) of all your fields on your farm.

Step 2 Calculate the livestock manure N capacity of the farm

1. Complete **Table 1** to give the total area of your farm in an NVZ.

Column 1 Enter the name of each field. Include rough grazing land and any rented land under your control during the calendar year. Use the continuation column if needed.

Column 2 Enter the area of each field in hectares (from Step 1e). Exclude areas of the field given over to surface water, hard-standing, buildings, roads or woodland unless the woodland is used for grazing. Add up the total of all field areas to give the total area **(A)**.

Note:

If you only know field areas in acres you will need to convert them to hectares. To do this, multiply the number of acres by 0.405, e.g. 276 acres = 112 ha.

2. Multiply the area of your farm in an NVZ **(A)** by 170 to give the livestock manure N capacity (as kg N) for your farm **(B)**.

Area of the farm in an NVZ			Livestock manure N farm limit			Livestock manure N capacity	
A	ha	X	170 kg N/ha	=	B	kg N	

(From the example in Table 1, the livestock manure N capacity of the 3 fields = 24.42 ha x 170 = 4,151 kg N per year)

The livestock manure N farm limit – Annex 1

Notes: *If part of your farm is outside an NVZ, you should:*

1. *Fill out Table 1 again, but this time with the fields on your farm that are outside the NVZ.*
2. *Once you have calculated the total area of the farm outside the NVZ, multiply this area by 250 kg N/ha (the limit contained within the Code of Good Agricultural Practice (revised; available late 2008)) to give the livestock manure N capacity for that part of the farm.*
3. *Add together the figure from B and the livestock manure N capacity for the part of your farm outside the NVZ to provide the total livestock manure N capacity for your whole farm.*

Step 3 Calculate the amount of nitrogen produced by the livestock on your farm

Complete **Table 2** using the standard figures for “total N produced by livestock type” (see Leaflet 3).

Column 1 Enter the type of livestock kept on your farm (see Leaflet 3) and units (usually 1, but 1000 for some poultry).

Column 2 Enter the number of each livestock type that were on the farm during the year (from Step 1c).

Notes:

- *If livestock are on the farm for only part of the year then enter the pro rata number. For instance, if there are 30 dairy heifer replacements on the farm for just 4 months then calculate the pro rata average number for the year (i.e. $30 \times 4/12 = 10$) which is equivalent to having 10 heifers for the whole year.*
- *Poultry (except ostrich) are in units of 1,000 so, for example, enter 50 for 50,000 birds.*

Column 3 Enter the “total N produced by livestock type per year” using the standard values from Leaflet 3.

Notes:

- *For permanently housed pigs and poultry, you may use the outputs from the ENCASH computer software (from Step 1), to enter into column 3 rather than the standard values from Leaflet 3. To get an annual manure N production figure from the sampling and analysis results you must also estimate the weight of manure produced in the calendar year and use the equation:*

Total N production = Total N content of the manure (kg/t) from analysis x Total weight of manure (t)

Column 4 Multiply the numbers in Columns 2 and 3 in each row and enter the results into Column 4. Add up Column 4 to calculate the total amount of nitrogen produced by all livestock on your farm (**C**).

The livestock manure N farm limit – Annex 1

Step 4 Calculate the amount of nitrogen in livestock manure that is imported or exported

You only need to complete this step if you import / export livestock manure.

Complete **Table 3** (Imported manure) and/or **Table 4** (Exported manure) using Table 7 in Leaflet 3.

Column 1 Enter the manure types that are imported or exported (Table 7, Leaflet 3).

Column 2 Enter the quantity (as t or m³) of each manure type that is imported or exported during the year.

Column 3 Enter the total N content of each manure type. You must use the standard values (given in Table 7, Leaflet 3), or the results from sampling and analysis.

Column 4 Multiply Columns 2 and 3 and enter the results in Column 4. Add up Column 4 to calculate the total quantity of nitrogen imported (**D**) and/or exported (**E**) during the calendar year.

Table 3 Manure N content of IMPORTED livestock manure.

Column 1	2	3	4
Manure type	Quantity t or m ³	Total N content kg/m ³ or kg/t	Total N kg N
<i>Example</i>			
Layer manure	200	x 16	= 3,200
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
		x	=
Total N of all imported livestock manure			D = kg N/year

Step 6 Compare the livestock manure N loading with the livestock manure N capacity of your farm

1. Compare the livestock manure N loading (**F** from Step 4) with the livestock manure nitrogen capacity (**B** from Step 2) of the farm.

Note: *If part of your farm is outside an NVZ, you should enter the total manure N capacity for your whole farm instead of the figure from B (see Step 2).*

2. If **F** is larger than **B**, then the livestock manure N loading of your farm is greater than the limit of 170 kg N/ha. This means that you are not compliant with the Regulations and you must make arrangements to either reduce the livestock manure N loading (by exporting manure or reducing the number of livestock kept on your farm) or increase the area of the farm (but also see information about a possible 'Derogation' at the start of this Leaflet).

The livestock manure N
loading
(**F** from Step 5)
kg N/year

The permitted livestock
manure N capacity
(**B** from Step 2)
kg N/year

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