

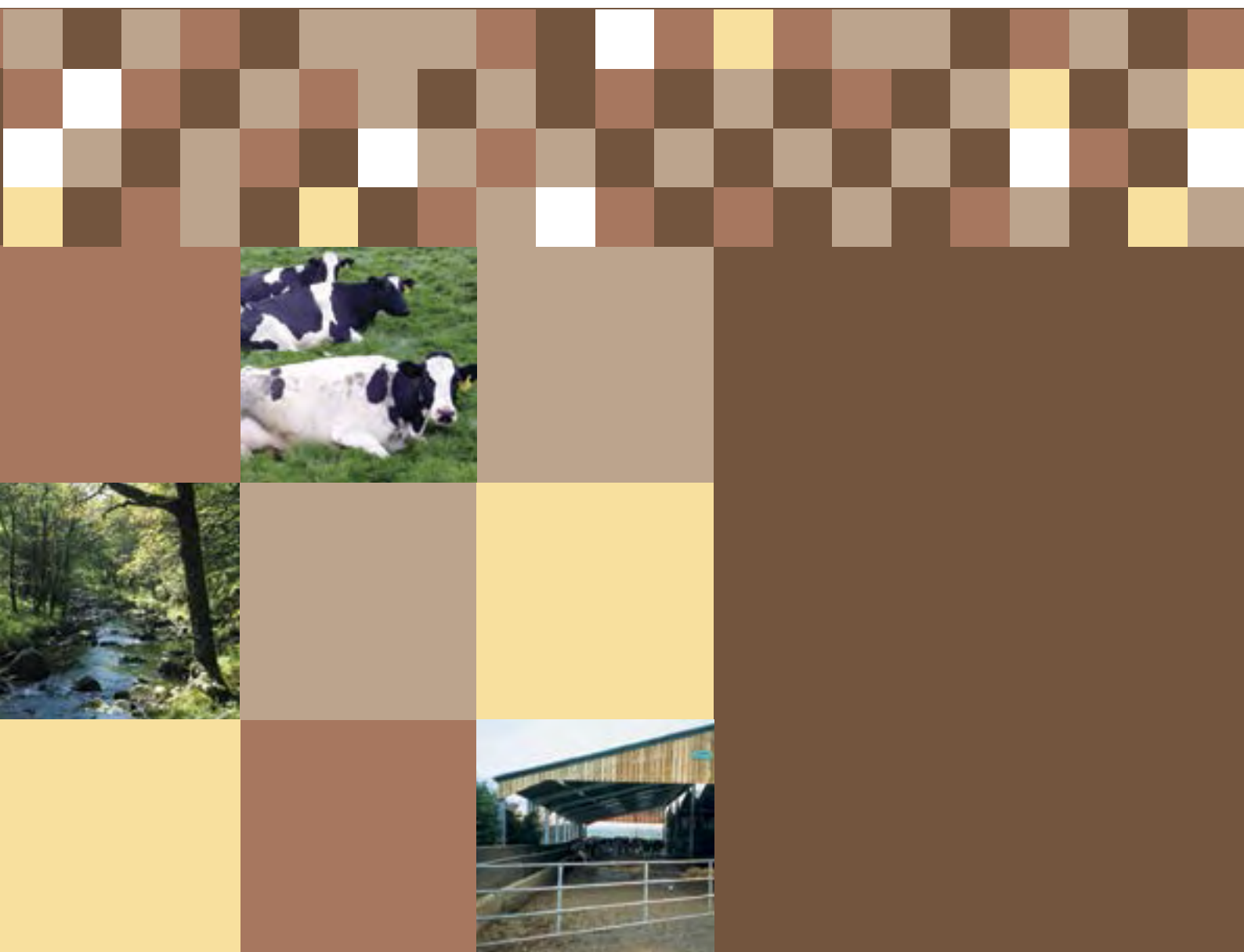


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# Nitrate Vulnerable Zones in Wales

## Guidance for Farmers





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## Introduction

This booklet describes the rules that farmers in Wales must follow to comply with the Nitrate Pollution Prevention (Wales) Regulations 2013 – Statutory Instrument 2013 No. 2506 (W. 245) – which came into force on 25 October 2013. The information provided is for guidance purposes only. The specific statutory elements concerning water and nitrates are set out in the Statutory Instrument, which can be seen on the National Archives web-site, [www.legislation.gov.uk](http://www.legislation.gov.uk). Electronic copies of this guidance, the workbook, and further information can be found on the Welsh Government's website, [www.wales.gov.uk](http://www.wales.gov.uk).

The regulations include requirements for keeping records and preparation of plans, calculations and maps. Many of these documents will be of value in support of other water quality initiatives that may be implemented on a farm.

## Why are the Regulations required?

The Nitrate Pollution Prevention (Wales) Regulations 2013 have been introduced to implement the European Communities Nitrates Directive and to reduce nitrogen losses from agriculture to water. They designate, and set rules for certain farming practices, within areas known as Nitrate Vulnerable Zones (NVZs) where nitrate pollution is a problem.

## Where are the NVZs and when do the rules apply?

In the 2013 regulations, 2.3% of the agricultural land area of Wales is designated as a NVZ on the basis that it drains into polluted water<sup>1</sup> and contributes to the pollution of that water. Some of the NVZ areas have been previously designated and are referred to as **existing NVZs** in the Farmers' Literature. In these areas you must comply with all the rules under the 2013 regulations as from 25 October 2013 (unless a later compliance date is specified). For land or holdings within new NVZs, i.e. those designated for the first time under the 2013 regulations and referred to as **newly designated NVZs** in the Farmers' Literature, the regulations do not apply until 1 January 2014 (unless a later compliance date is specified).

<sup>1</sup> Water has been identified as polluted if:

- It is freshwater (i.e. either groundwater or surface freshwater) and contains a concentration of nitrates greater than 50mg/l, or could do so if the regulations do not apply there; or
- It is eutrophic\* or may in the near future become eutrophic if the regulations do not apply there.

\* Eutrophic means water that is enriched by nitrogen compounds, causing an accelerated growth of algae and higher forms of plant life that produces an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned.

The designated areas are shown on field-scale maps that can be seen on the Welsh Government web-site or at its Divisional Offices. Details are also available from Natural Resources Wales and the NVZ Helpline – 01974 847000.

## What if my farm is partly in a NVZ?

Most of the NVZ rules apply to individual fields. You will need to comply with these rules in relation to each of the fields on your farm that fall within an NVZ.

The following rules apply to the farm as a whole (as opposed to individual fields):

- Minimum storage capacity for *livestock* manure;
- *Livestock* manure total nitrogen farm limit (170 kg/ha).

Land outside an NVZ is not subject to the NVZ rules. You will therefore need to undertake calculations for the above two rules on a pro-rata basis.

## Keeping records

- Any person required to make records under the Regulations must keep them for five years;
- An occupier must keep a copy of any advice provided by person who is a member of the Fertiliser Advisers Certification and Training Scheme (FACTS) and which is relied on for any purpose under the Regulations;
- Any person using sampling and analysis to determine nitrogen content in *organic manure* must keep the original report from the laboratory.

## Compliance and enforcement

Any person or persons who are the owners or occupiers (e.g. tenants, graziers) of an *agricultural land holding* (regardless of its size) within a designated NVZ are responsible for complying with these rules.

Natural Resources Wales is responsible for assessing compliance and it will do this by visiting farms and checking records.

Selected farms receive a letter beforehand explaining what will be required during the visit. If a breach of the Regulations is confirmed (this may involve detailed checks of records held by other agencies, e.g. British Cattle Movement Service, or other farmers, e.g. in the case of manure export), actions will be taken according to the Natural Resources Wales Compliance Assessment and Enforcement and Prosecution procedures. Possible actions depend on the seriousness of the breach and impact on the environment. They include:

- Advice on remedying a minor breach;
- Warning letter noting the breach, which may be taken into account in the event of a future breach;
- Formal caution;
- Prosecution.

Complying with the NVZ rules is also a Statutory Management Requirement for cross-compliance under the Single Payment Scheme. This means NVZs form part of the cross-compliance inspection regime (i.e. subject to EU rules regarding notice period before inspection) and that farmers have to comply with NVZ rules to be entitled to their full payment – failure to comply could lead to deductions.

Details of selection systems, inspection procedures and action taken in the event of a breach are available by contacting Natural Resources Wales. Details are also available regarding how exceptional circumstances are dealt with and what to do if you wish to register a complaint.

## Other information relating to implementation of the rules

**Code of Good Agricultural Practice** – the NVZ rules embody many of the good practices, relating to the use and storage of fertiliser and manure, set out in the “Code of Good Agricultural Practice for the Protection of Water, Soil and Air for Wales 2011 (Welsh Government)”. Farmers throughout Wales are encouraged to follow this code; in particular the parts that deal with minimising nitrate loss to help prevent nitrate levels in water bodies rising to the point where more widespread regulation becomes necessary. It will also help to reduce other pollution, including phosphate losses and microbiological contamination of bathing waters.

**Biosecurity** – to comply with some of the rules you may decide to export a proportion of the manure produced by your livestock. However, you should note that movement of manure/slurry between premises carries a risk of spreading diseases unless both premises are of exactly the same disease status – and this is unlikely to be the case. Therefore you should give serious consideration to this option and weigh up the benefits against the risks. There are many diseases, some with significant impact and long-term effects that may be disseminated by this route (even if applied to grassland for forage conservation). As a minimum, you should take basic steps to minimise the risk of spreading animal disease while transporting the manure to other farms. These include:

- Providing secure containment for the manure;
- Cleaning the exterior of the vehicle used for transport before leaving your farm;

- Ensuring the manure is spread to tillage land or to grassland used for forage conservation, i.e. avoid animals having access to land that has received manure/slurry for as long as possible.

**Other schemes and regulations** – when adapting farm practices to comply with the NVZ rules, you must also adhere to all management agreements on your land (e.g. Glastir, Tir Cynnal, Tir Gofal or Organic Farming Scheme). Other legal obligations (such as the need to apply for an Environmental Impact Assessment screening decision before spreading slurry on uncultivated land or semi-natural areas) must also be satisfied.

## Using the Guidance and Workbook templates

This **Guidance Booklet** outlines the rules (and the dates from which they apply) for NVZs. It is important that you read each rule and assess its implications for your farming system.

Many of the rules involve forward planning, making calculations or keeping records and a separate **Workbook** of templates is provided for this purpose. The **Workbook** also notes when the various rules come into force and at what times of the year action needs to be taken. Completing this (and updating it at regular intervals) will help identify adaptations that will be needed on the farm and enable the necessary records to be kept and presented for inspection. As long as you provide what is required, alternative methods of preparing the necessary plans and calculations, and keeping the necessary records may be used to demonstrate compliance with the Regulations.

## Glossary and Definitions

Certain words and terms have specific meanings in the context of the NVZ rules. These (together with their meanings) are listed below and for ease of reference are highlighted in italic text in the **Guidance** and **Workbook** documents:

*Agricultural area* – means any *agricultural* land used for *agricultural* purposes.

*Agriculture* – has the same meaning as in section 109(3) of the Agriculture Act 1947.

*Grass* – means:

- a) permanent grassland or temporary grassland (temporary means less than four years),
- b) that exists between the sowing and ploughing of the grass, and
- c) includes crops under-sown with grass,

but does not include grassland with 50% or more clover.

Holding – means all the land located within a nitrate vulnerable zone and its associated buildings that are at the disposal of the occupier and which are used for the growing of crops in soil or rearing of *livestock* for *agricultural* purposes.

Land that has a low run-off risk – means land that:

- a) has an average slope less than 3°,
- b) does not have land drains (other than sealed impermeable pipes), and
- c) is at least 50 metres from a watercourse or conduit leading to a watercourse.

Livestock – means any animal (including *poultry*) included in **Template 2.3** of the **Workbook**.

Manufactured nitrogen fertiliser – means any *nitrogen fertiliser* (other than *organic manure*) manufactured by an industrial process.

Nitrogen fertiliser – means any substance containing one or more nitrogen compounds used on land to enhance growth of vegetation and includes *organic manure*.

Organic manure – means any *nitrogen fertiliser* or *phosphate fertiliser* derived from animal, plant or human sources and includes *livestock* manure.

*Organic manure* with high readily available nitrogen – means *organic manure* in which more than 30% of the total nitrogen content is available to the crop at the time of *spreading*<sup>2</sup>. (This definition applies specifically to the rules regarding “closed periods”).

Phosphate fertiliser – means any substance containing one or more phosphorus compounds used on land to enhance growth or vegetation and includes *organic manure*.

Poultry – means poultry included in **Template 2.3** of the **Workbook**.

Precision *spreading* equipment – means a trailing shoe, dribble bar or injector system. (This definition applies specifically to the rules regarding “*spreading organic manure* near surface water, boreholes, springs or wells”).

Sandy soil<sup>3</sup> – means any soil over sandstone, and any other soil where:

- a) in the layer up to 40 cm deep, there are:
  - i. more than 50% by weight of particles from 0.06 to 2 mm in diameter,
  - ii. less than 18% by weight of particles less than 0.02 mm in diameter, and
  - iii. less than 5% by weight of organic carbon, and

<sup>2</sup> Generally this definition covers *slurry*, most forms of *poultry* manure and other off-farm wastes such as liquid digested sludges (solid farmyard manure, duck manure and dirty water do not come under this definition).

<sup>3</sup> Accurate assessment of soil texture requires laboratory analysis, but for practical purposes texture can be assessed by hand. A methodology is included in The Fertiliser Manual (RB209) (Defra, 8th edition, June 2010).



- b) in the layer from 40 cm to 80 cm deep, there are:
- i. more than 70% by weight of particles from 0.06 to 2 mm in diameter,
  - ii. less than 15% by weight of particles less than 0.02 mm in diameter, and
  - iii. less than 5% by weight of organic carbon.

Shallow soil – means soil that is less than 40 cm deep.

Slurry – means excreta produced by *livestock* (other than *poultry*) while in a yard or building (including any bedding, rainwater or washings mixed with it) that has a consistency that allows it to be pumped or discharged by gravity (in the case of excreta separated into its liquid and solid fractions, the *slurry* is the liquid fraction).

Spreading – includes application to the surface of the land, injection into the land or mixing with the surface layers of the land but does not include the direct deposition of excreta on to land by animals.

Storage period – means:

- a) for pigs and *poultry*, the period between 1 October and 1 April (dates inclusive), and
- b) for all other *livestock*, the period between 1 October and 1 March (dates inclusive).

(This definition applies specifically to the rules regarding “storage capacity”).

Temporary field site:

- Must not be<sup>4</sup>:
  - a) in a field liable to flooding or becoming waterlogged,
  - b) within 50 metres of a spring, well or borehole, or within 10 metres of surface water or a land drain (other than a sealed impermeable pipe),
  - c) located in any single position for more than 12 consecutive months,
  - d) located in the same place as an earlier one constructed within the last two years, or
  - e) located within 30m of a watercourse on land identified within the risk map as having a slope of greater than 12°;
- Should have a surface area as small as reasonably practicable to minimise the leaching effect of rainfall and topsoil must not be removed from the ground upon which it is to be constructed.

(This definition applies specifically to the rules regarding “storage of *organic manure*”).

<sup>4</sup> Such a site can only be used for storage of *organic manure* as long as the material is solid (i.e. can be stacked in a free standing heap and that does not drain liquid).

## Storage of *organic manure* (including *slurry*)

Some of these rules do not apply to newly designated NVZs until 1 August 2015 (however, in the meantime SSAFO regulations (2010)<sup>5</sup> for storage capacity apply). If you envisage that changes will need to be made to your farming system or that additional storage will be required to enable you to comply with the rules you should start planning the actions you need to take well in advance of this date.

See Part 1 of the Workbook for details about calculations and record keeping.

- If you store any *organic manure* (other than *slurry*), or any bedding contaminated with any *organic manure*, you must store it:
  - a) in a vessel,
  - b) in a covered building,
  - c) on an impermeable surface, or
  - d) on a *temporary field site*, as long as the material is solid manure that can be stacked in a free standing heap and does not drain liquid;
- You must cover with impermeable material solid *poultry* manure that does not have bedding mixed into it and is stored on a *temporary field site*;
- If you separate *slurry* into its solid and liquid fractions, it must be carried out mechanically or on an impermeable surface where the liquid fraction drains into a suitable receptacle – only applies to newly designated NVZs from 1 August 2015;
- If you keep any of the animals listed in **Template 1.1 and Tables 1.1 and 1.2** of the **Workbook** you must provide sufficient storage for all *slurry* produced on the *holding* during the *storage periods* and all *poultry* manure produced in a yard or building on the *holding* during the *storage period* – only applies to newly designated NVZs from 1 August 2015;
- You must calculate the volume of manure produced by the animals on the *holding* in accordance with **Template 1.1 and Tables 1.1 and 1.2** of the **Workbook** – only applies to newly designated NVZs from 1 August 2015;
- A *slurry* store must have the capacity to store, in addition to the manure, any rainfall, washings or other liquid that enters the vessel (either directly or indirectly) during the *storage period* – only applies to newly designated NVZs from 1 August 2015;
- Storage facilities are not necessary for *slurry* or *poultry* manure:
  - a) sent off the *holding*, or
  - b) *spread on land that has a low run-off risk* (provided that this is done in accordance with the other NVZ restrictions on *spreading*); but in this case storage facilities for an additional week's manure must be provided as a contingency measure in the event of *spreading* not being possible on some dates.

<sup>5</sup> Guidance on Control of Pollution (Silage, Slurry, and Agricultural Fuel Oil) (Wales) Regulations 2010 is available from Welsh Government and Natural Resources Wales.

## Limiting the application of *organic manure*

- You must ensure that in any calendar year the total amount of nitrogen in *livestock* manure applied to the *holding* whether directly by an animal whilst grazing or by *spreading*, does not exceed 170 kg multiplied by the area of the *holding* in hectares<sup>6</sup>;
- You must take into account all classes of *livestock* included in **Template 2.3** of the **Workbook** and you must use the figures in the Template to calculate the amount of nitrogen produced by *livestock*;
- In calculating the area for the purpose of ascertaining the amount of nitrogen permitted to be applied you should exclude surface waters, hardstandings, buildings, roads and ungrazed woodlands;
- You should ensure that in any twelve month period, the total amount of nitrogen in *organic manure* spread on any given hectare on the holding must not exceed 250 kg<sup>7</sup>.

## Planning the *spreading* of *nitrogen fertiliser* (includes *manufactured nitrogen fertiliser*, *slurry* and other *organic manures*)

The NVZ rules for this aspect relate only to planning and record keeping. Full details are included in the **Workbook**.

## Total nitrogen *spread* on a holding

Irrespective of the figures calculated for the Plan (in the section titled “Planning the *spreading* of *nitrogen fertiliser*”), you must ensure that the total amount of:

- a) nitrogen from *manufactured nitrogen fertiliser*, and
- b) nitrogen available for crop uptake from *organic manure* in the growing season in which it is *spread*<sup>8</sup>

*spread* on the crops listed in **Table 4.1** of the **Workbook** and calculated according to the figures in **Tables 4.2 and 4.3** of the **Workbook**, does not exceed the limits set out in any 12-month period (i.e. the total amount of nitrogen permitted to be *spread* on any given crop is the figure in the second column of **Table 4.1**, adjusted in accordance with the notes to the table and multiplied by the total area in hectares of that crop sown on the *holding*).

<sup>6</sup> Unless you have successfully applied for a derogation to this rule. Full details are available from the Welsh Government or Natural Resources Wales.

<sup>7</sup> There is an exception to this rule which allows for increased amounts of total nitrogen in *organic manure* to be *spread* in the form of certified compost. A further increase on orchard land is also permitted. Full details are available from the Welsh Government or Natural Resources Wales.

<sup>8</sup> This rule now applies to all *organic manures* as opposed to *livestock* manure only in previous regulations.

For the purposes of this rule, you must first establish the total amount of nitrogen in the manure, either using **Table 4.2** of the **Workbook** or by sampling and analysis in accordance with **Annex 1** of this **Guidance Booklet**.

Once the total amount of nitrogen in the manure has been established, the percentages in **Table 4.3** of the **Workbook** must be assumed to establish the amount of nitrogen in the manure that is available for crop uptake in the growing season in which it is *spread*.

## Controlling the *spreading of nitrogen fertiliser* (includes *manufactured nitrogen fertiliser*, *slurry* and other *organic manures*)

- If you intend to *spread nitrogen fertiliser*, you must first undertake a field inspection to consider the risk of nitrogen getting into surface water;
- You must not *spread nitrogen fertiliser* on land if there is a significant risk of nitrogen getting into surface water, in particular taking into account:
  - a) the slope of the land, particularly if greater than 12° (equivalent to “20%” or “1 in 5”),
  - b) any ground cover,
  - c) proximity to surface water,
  - d) weather conditions,
  - e) soil type, and
  - f) presence of land drains;
- You must not *spread nitrogen fertiliser* if the soil is waterlogged, flooded or snow covered, or has been frozen for more than 12 hours in the previous 24 hours;
- You must not *spread manufactured nitrogen fertiliser* within 2 metres of surface water<sup>9</sup>;
- You must not *spread organic manure* within:
  - a) 10 metres of surface water, or
  - b) 6 metres of surface water if using *precision spreading equipment*, however, *livestock* manure (other than *slurry* and *poultry* manure) may be *spread* there if:
    - a) it is *spread* on land managed for breeding wader birds or as a species-rich semi-natural grassland and the land is:
      - i. notified as a Site of Special Scientific Interest under the Wildlife and Countryside Act 1981, or<sup>10</sup>

<sup>9</sup> Includes: coastal waters, estuaries, canals, lakes, ponds, rivers, streams, and ditches which contain free flowing water and also temporarily dry ditches and blind ditches.

<sup>10</sup> Subject to written agreement from Natural Resources Wales.

- ii. subject to an agri-environment commitment entered into under Council Regulation (EC) 1698/2005 (on support for rural development by the European Agricultural Fund for Rural Development (EAFRD)),<sup>11</sup>
  - b) it is *spread* between 1 June and 31 October inclusive,
  - c) it is not *spread* directly on to surface water, and
  - d) the total annual amount does not exceed 12.5 tonnes per hectare;
- You must not *spread organic manure* within 50 metres of a borehole, spring or well;
- If you *spread nitrogen fertiliser* you must do so in as accurate a manner as possible;
- If you apply *organic manure* on to the surface of bare soil or stubble (other than soil that has been sown) you must ensure that it is incorporated into the soil in accordance with the following:
  - *Poultry* manure must be incorporated as soon as practicable, and within 24 hours at the latest,
  - *Slurry* and liquid digested sewage sludge (i.e. liquid from the treatment of sewage sludge by anaerobic digestion) must be incorporated as soon as practicable, and within 24 hours at the latest, unless it was applied using *precision spreading equipment*,
  - If the land is within 50 metres of surface water and slopes in such a way that there may be run-off to that water, any other *organic manure* (other than *organic manure spread* as a mulch on *sandy soil*) must be incorporated into the soil as soon as practicable, and within 24 hours at the latest.

The following rule applies from 1 January 2016 in newly designated NVZs.

- If you *spread slurry* you must use *spreading* equipment with a low *spreading* trajectory, i.e. below 4 metres from the ground.<sup>12</sup>

## Closed periods for *spreading nitrogen fertiliser* (includes *manufactured nitrogen fertiliser*, *slurry* and other *organic manures*)

The following rules for *organic manure* apply immediately in existing NVZs and from 1 August 2015 in newly designated NVZs.

- You must not *spread organic manure with high readily available nitrogen*<sup>13</sup> on land during the following inclusive dates (the “closed period”):

<sup>11</sup> Subject to written agreement from Welsh Government.

<sup>12</sup> *Spreading* equipment with a *spreading* trajectory of more than 4 metres from the ground can be used on *land that has a low run-off risk* subject to certain conditions.

<sup>13</sup> Generally this definition includes *slurry*, most forms of *poultry* manure and other off-farm materials such as liquid digested sludges (solid farmyard manure, duck manure and dirty water as defined in page 11 of the **Workbook** do not come under this definition).

Soil type	Grassland	Tillage land
<i>Sandy or shallow soil</i> <sup>14</sup>	1 September to 31 December	1 August to 31 December
All other soils	15 October to 31 January	1 October to 31 January

- *Spreading organic manure with high readily available nitrogen* on tillage land with *sandy or shallow soil* is permitted between 1 August and 15 September inclusive provided that the crop is sown on or before 15 September;
- If you are an occupier of a *holding* registered as an organic producer with a body registered with the Advisory Committee on Organic Standards you may *spread organic manure with high readily available nitrogen* at any time on:
  - a) crops listed in **Column 1** of **Table A** below, or
  - b) other crops in accordance with written advice from a person who is a member of the FACTS,

provided that each hectare on which *organic manure* is *spread* does not receive more than 150 kg total nitrogen between the start of the closed period and the end of February;

Table A

Crop	Notes	Maximum nitrogen rate (kg/ha) <sup>15</sup>
Winter oilseed rape	a	30
Asparagus		50
Brassica	b	100
<i>Grass</i>	a, c	80
Over-wintered salad onions		40
Parsley		40
Bulb onions		40

## Notes

- a) Nitrogen must not be *spread* to these crops after 31 October.
- b) An additional 50 kg/ha of nitrogen may be *spread* every 4 weeks during the closed period up to the date of harvest.
- c) A maximum of 40 kg/ha nitrogen may be *spread* at any one time.

<sup>14</sup> Accurate assessment of soil texture requires laboratory analysis, but for practical purposes texture can be assessed by hand. A methodology is included in The Fertiliser Manual (RB209) (Defra, 8th edition, June 2010).

<sup>15</sup> The maximum rate applies to closed period exemption for *manufactured nitrogen fertiliser*.

- From the end of the closed period until the end of February:
  - a) the maximum amount of *slurry* that may be *spread* at any one time is 30 cubic metres per hectare and the maximum amount of *poultry* manure that may be *spread* at any one time is 8 tonnes per hectare, and
  - b) there must be at least three weeks between each *spreading*.

The following rules for *manufactured nitrogen fertiliser* apply immediately in existing and newly designated NVZs.

- You must not *spread manufactured nitrogen fertiliser* on land during the following periods (all dates inclusive):
  - a) on *grassland*, from 15 September to 15 January,
  - b) on tillage land, from 1 September to 15 January;
- *Spreading manufactured nitrogen fertiliser* during these periods is permitted on crops specified in **Table A**, provided the maximum rate in **Column 3** is not exceeded<sup>16</sup>;
- *Spreading manufactured nitrogen fertiliser* during those periods on crops not in **Table A** is permitted on the basis of written advice from a person who is a member of the FACTS.

<sup>16</sup> If you apply *manufactured nitrogen fertiliser* during the closed period, you should ensure that its use was identified as necessary in your "nitrogen fertiliser spreading plan" (see **Part 3** of the **Workbook**).

## Sampling and analysis of *organic manure*

### *Slurry* and other liquid and semi-liquid *organic manure*

1. At least five samples, each of 2 litres, must be taken.
2. Subject to point 3. below, the five samples must be taken from a vessel, and
  - a) if reasonably practicable, the *slurry* must be thoroughly mixed before the samples are taken; and
  - b) each sample must be taken from a different location.
3. But if a tanker used for *spreading* is fitted with a suitable valve, the samples may be taken while *spreading*, and each sample must be taken at intervals during the *spreading*.
4. The samples (by whichever method taken) must be poured into a larger container, stirred thoroughly and a 2 litre sample must be taken from that container and poured into a smaller clean container.
5. The 2 litre sample must then be sent for analysis.

### Solid manures

1. The samples must be taken from a manure heap.
2. At least ten samples of 1kg each must be taken – each from a different location in a heap.
3. Each sub-sample must be taken at least 0.5 metres from the surface of the heap.
4. If samples are being collected to calculate compliance with the whole farm limit for pigs and *poultry*, four samples for analysis must be taken in a calendar year (one taken in each quarter) from manure heaps not more than 12 months old.
5. The sub-samples must be placed on a clean, dry tray or sheet.
6. Any lumps must be broken up and the sub-samples must be thoroughly mixed together.
7. A representative sample of at least 2kg must then be sent for analysis.

If you use sampling and analysis to determine the nitrogen content in *organic manure*, you must keep the original report from the laboratory.