Llywodraeth Cymru
Welsh Government

The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021

Guidance for Farmers and Land Managers

OGL © Crown copyright 2021 WG41449 Digital ISBN 978-1-80195-160-9

Contents

Glossary and Definitions 2

Introduction 6

Part 1 – Requirements from 1 April 2021 12

Part 2 – Requirements from 1 January 2023 15

Part 3 – Requirements from 1 August 2024 26

ANNEX 1 30

- Guidance Flowchart

ANNEX 2 33

- Templates for Plans, Calculations and Record keeping

ANNEX 3 70

- Sampling and Analysis of *Organic manure*

ANNEX 4 71

- General Requirements for Storage of *Slurry* and *Silage*

ANNEX 5 74

- Specific Requirements for *Silage* Making and Storage of *Silage* Affected by the Regulations

ANNEX 6 78

- Specific Requirements for *Slurry* Storage Systems covered by the Regulations

ANNEX 7 83

- Schedules taken from the Regulations

ANNEX 8 94

- Further Information and Contact Details

Glossary and Definitions

Certain words and terms have specific meanings in the context of the Regulations. These (together with their meanings) are listed below and for ease of reference are highlighted in *italic* text in this Guidance and associated **Annexes**:

Term	**Description**
agricultural area	any land used for agricultural purposes as defined in the Agriculture Act 1947.
agriculture	has the same meaning as in section 109(3) of the Agriculture Act 1947.
controlled waters	has the meaning given in section 104 of the Water Resources Act 1991.
crop with high nitrogen demand	includes, but not limited to, grass, potatoes, sugar beet, maize, wheat, oilseed rape, barley, brassicas, rye and triticale.
grass	means a) permanent grassland or temporary grassland (temporary means less than 4 years); b) that exists between the sowing and ploughing of the grass and; c) includes crops under-sown with grass; d) but does not include grassland with 50% or more clover.
holding	all the land 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	land that: a) has an average slope of less than 3° b) does not have land drains (other than sealed impermeable pipe); and c) is at least 50 metres from a *watercourse* or conduit leading to a *watercourse*.
lightly fouled water(dirty water)	*livestock* urine or faeces contaminating otherwise clean rainfall derived run off **but** with a low nutrient content e.g. from yards trafficked by *livestock* where the yards are regularly scraped or cleaned.
livestock	any animal specified in **Tables 1.1, 1.2, 1.3 and 2.3** of **Annex 2.**

Term	Description
manufactured nitrogen fertiliser	any *nitrogen fertiliser* (other than *organic manure*) manufactured by an industrial process.
nitrogen fertiliser	any substance containing one or more nitrogen compounds used on land to enhance growth of vegetation and includes *organic manure*.
notice	a written legal *notice* requiring remedial work to be carried out by a specified date.
organic manure	any *nitrogen fertiliser* or *phosphate fertiliser* derived from animal, plant or human sources and includes *livestock* manure.
organic manure with high readily available nitrogen	*organic manure* in which more than 30% of the total nitrogen content is available to the crop at the time of spreading[1]. (This definition applies specifically to the rules regarding 'closed periods').
parlour washings	*lightly fouled water* arising from washing down the milking parlour which may contain urine and/or faeces.
phosphate fertiliser	any substance containing one or more phosphorus compounds used on land to enhance growth or vegetation and includes *organic manure.*
poultry	*poultry* included in **Tables 1.3 and 2.3** of **Annex 2**.
precision spreading equipment –	machinery designed to place the organic manure rather than spread over an area e.g. 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").
reception pit	a containment system used for the collection of slurry before it is transferred into a slurry storage tank or for the collection of slurry discharged from such a tank.
sandy soil	any soil over sandstone, and any other soil where: a) in the layer up to 40cm deep there are: i. more than 50% by weight of particles from 0.06 to 2mm in diameter; ii. less than 18% by weight of particles less than 0.02mm in diameter; and iii. less than 5% by weight of organic carbon; and b) in the layer from 40cm to 80cm deep there are: i. more than 70% by weight of particles from 0.06 to

[1] generally this definition covers *slurry*, most forms of *poultry* manure and other off-farm wastes such as liquid digestate (solid farmyard manure, duck manure, *parlour washings* and *lightly fouled water* do not come under this definition).

Term	Description
	2mm in diameter; ii. less than 15% by weight of particles less than 0.02mm in diameter; and iii. less than 5% by weight of organic carbon.
shallow soil	soil that is less than 40 cm deep.
silage	grass or other green fodder compacted and stored in airtight conditions, typically in a silo, but also includes bales or bags.
silage effluent	the liquid generated while ensiling a crop.
silo	a structure used for making or storing *silage.*
slurry	liquid or semi-liquid matter composed of— (i) excreta produced by *livestock* (other than *poultry*) while in a yard or building (including that held in wood chip corrals); or (ii) a mixture wholly or mainly consisting of *livestock* excreta, *livestock* bedding, rainwater and washings from a building or yard used by *livestock* of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process;
slurry storage tank	a containment system built to the specified construction standards e.g. includes a lagoon, a pit (other than a *reception pit*) or tower used for the storage of *slurry*.
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	storage period 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	location must not be[2]: 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

[2] 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)

Term	Description
	sealed impermeable pipe); c) located in any single position for more than 12 consecutive months, or d) located in the same place as an earlier one constructed within the last two years; e) topsoil must not be removed from the ground upon which it is to be constructed; f) must not be located within 30m of a *watercourse* on land identified within the risk map as having a slope of greater than 12^{o}(equivalent to "20%" or "1 in 5"); g) should have a surface area as small as reasonably practicable to minimise the leaching effect of rainfall (This definition applies specifically to the rules regarding "storage of *organic manure*").
watercourse	has the meaning given in section 221 of the Water Resources Act 1991.
waterlogged	when the whole of the plough layer is saturated by rainwater or filled with water by virtue of a high water table or water collected (perched) above a compacted soil.

Introduction

This Guidance describes the requirements farmers and land managers in Wales must follow to comply with the Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 – (SI 2021/77, W.20) (the Regulations) which comes into force on 1 April 2021. Electronic copies of this Guidance and further information can be found on the Welsh Government's website https://gov.wales/land-management.

Natural Resources Wales (NRW) is responsible for enforcing the Regulations. Advice on general nutrient storage and management can be obtained from NRW and the Welsh Government.

The requirements of the Regulations are legally binding and include requirements for keeping records and preparation of plans, calculations and maps. This Guidance is intended to help you meet the requirements of the Regulations. NRW, Welsh Government and the Control of Agricultural Pollution Regulations (ADAS) Helpline will be able to help you with any queries. See **Annex 8** for contact details.

Why are the Regulations required?

The Water Resources (Control of Agricultural Pollution) (Wales) Regulations 2021 have been introduced to reduce losses of pollutants from *agriculture* to the environment by setting rules for certain farming practices. The Regulations also set standards for *silage* making, storage of *silage effluent* and for *slurry* storage systems. They replace the Water Resources (Control of Pollution)(Silage and Slurry)(Wales) Regulations 2010 and establish good practice requirements for nutrient management into one set of regulations to reduce complexity.

Slurry and *silage effluent* have caused significant pollution incidents often due to farms having inadequate storage, a lack of capacity or being of poor construction. *Livestock* manures can also contribute to environmental pollution when they are spread to land when soil and weather conditions are not appropriate or where there is no crop requirement. These Regulations will ensure all Welsh farms are able to demonstrate good practice standards required to gain public confidence.

Do the Regulations apply to my farm business?

YES – the Regulations apply to all farm businesses in Wales. Any person or persons who are the owners or occupiers (e.g. tenants, graziers) of an *agricultural* land *holding* (regardless of its size) are responsible for complying with these rules.

When do the Regulations apply?

The Regulations will come into force from 1 April 2021, subject to the following Transition Periods, which apply only to farms not previously in a Nitrate Vulnerable Zone*.

Requirements from 1 April 2021

- **Storage of *silage;***
- **Notifying Natural Resources Wales (NRW) of the construction of any new substantially enlarged or reconstructed *silo* or *slurry* storage system;**
- **Controlling the *spreading* of *nitrogen fertiliser* at high risk times and high risk areas;**
- **Incorporating *organic manures* into bare soil or stubble; and**
- **Closed periods for *spreading manufactured nitrogen fertiliser.***

Requirements from 1 January 2023

- **Risk Maps;**
- **Storage of *organic manure;***
- ***Temporary field sites;***
- **Nitrogen Limits – whole holding and field;**
- **Import/Export of manure;**
- **Nutrient Management Planning (NMP) and recording; and**
- **Nutrient applications restricted to crop limits.**

Requirements from 1 August 2024

- **Closed periods for *spreading nitrogen fertiliser* (includes *slurry* and other *organic manures*);**
- **Storage capacity for *Slurry; and***
- **The *storage period.***

*Nitrate Vulnerable Zones (NVZs)

The above transition periods do not apply to any agricultural land in an area previously designated as a Nitrate Vulnerable Zone (NVZ). The Water Resources (Control of Agricultural Pollution)(Wales) Regulations 2021 replace the NVZ regulations. You must be fully compliant with the Water Resources (Control of Agricultural Pollution)(Wales) Regulations 2021 from 1 April 2021.

Using this Guidance and Templates

This Guidance outlines the requirements of these Regulations.

A flowchart is provided at **Annex 1** of this Guidance which is designed to help you understand the requirements of the Regulations and the implications for your farming system, using a step by step approach.

Many of the rules involve forward planning, making calculations or keeping records and **Annex 2** provides templates for this purpose. Completing this will help identify the adaptations needed on the farm and enable the necessary records to be kept and presented for inspection. Summary tables of what you need to do and when are provided in each part. 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.

All tables provided in **Annex 2** for calculation and record keeping purposes will be available in Excel format and can be accessed via https://gov.wales/land-management

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) are responsible for complying with these rules.

Natural Resources Wales (NRW) is responsible for assessing compliance and it will do this by inspecting farms and checking records.

Selected farms receive written confirmation beforehand explaining what will be required during the visit. 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.

If a breach of the Regulations is confirmed actions will be taken according to the Natural Resources Wales Enforcement and Prosecution policy and 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;
- Legal notice;
- Formal caution; or
- Prosecution

Details of selection systems, inspection procedures and action taken in the event of a breach are available by contacting Natural Resources Wales - see **Annex 8**. Details are also available on how exceptional circumstances are dealt with and what to do if you wish to register a complaint.

Other schemes and regulations - when adapting farm practices to comply with the Regulations, you must also adhere to all management agreements on your land (e.g. under Glastir 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.

If you claim Basic Payment Scheme or any Rural Development Programme payments you must also observe the Common Agricultural Policy (CAP) Cross Compliance standards including the Good Agricultural and Environmental Conditions (GAEC) which aim to protect surface and ground water from pollution.

Compliance with the Regulations will form part of the cross-compliance inspection regime. You will have to comply with the Regulations to be entitled to full payment - failure to comply could lead to deductions.

Please see the FAQ document which accompanies this Guidance for further information.

Existing regulations for storage of slurry

You must continue to comply with The Water Resources (Control of Pollution) (Silage and Slurry) (Wales) Regulations 2010 until 1 August 2024.

Storage of *Slurry*

All *slurry* **must be contained**. See **Section 3.3** and **Annex 4** for general requirements. All *slurry* stores must meet the minimum construction requirements set out in **Annex 6.**

Exempt Structures

The construction requirements below will not apply to a store built before 1 March 1991:

- which was being used for storing *slurry;* or
- where it was not in use, it was constructed for that purpose or a contract for its construction, substantial enlargement or substantial reconstruction was entered into before 1 March 1991; or
- such work was commenced before that date, **and**
- in either case, the work was completed before 1 September 1991.

NB This exemption only applies to the <u>construction</u> requirements of a pre 1991 store. An old store may be used but the storage <u>capacity</u> requirements of these Regulations must still be met by 1 August 2024.

Slurry Store Construction Standards

The Water Resources (Control of Agricultural Pollution)(Wales) Regulations 2021 replace The Water Resources (Control of Pollution)(Silage and Slurry)(Wales) Regulations 2010. As a result all *slurry* stores must comply with the relevant requirements by the 1 August 2024.

All *slurry* stores not covered by the existing 1991 SSAFO exemption must comply with the requirements in **Schedule 6 (Annex 7)** of the Regulations detailing the minimum construction requirements.

See **Annex 6** for details of *slurry* store construction requirements of the Regulations

For NRW to be satisfied the installation complies with the Regulations, you are likely to be asked for additional information about the size, design and construction materials used. NRW has a form (available on its website and in its local offices, see **Annex 8** for contact details) to help you do this.

NRW can serve a *notice* to require improvements to be made to an installation if they do not consider it to be suitable. You will be contacted if this is the case.

Please see **FAQ document** for further information.

Notice requiring works

NRW has powers to serve a *notice* on you requiring you to take action to improve existing installations where NRW considers there is a significant risk of pollution to *controlled waters*. (This can include field *silage* sites and otherwise “exempt” installations). The actions required by the *notice* must be appropriate to the task of minimising the risk of pollution (For example, to require sufficient *slurry* storage to be provided.)

You will have a minimum of 28 days to comply with the *notice*. NRW may extend this minimum period to take into account, for example, of the time needed to obtain planning permission, to arrange for contractors to do the work, the weather or site conditions.

Natural Resources Wales may serve, on a person who has custody or control of *silage* or *slurry* or is responsible for the *silo* or *slurry* storage system a notice

requiring the person to carry out works, to take precautions or other steps, specified in the notice.

The works, precautions or other steps must be, in the opinion of Natural Resources Wales, appropriate for reducing to a minimum any significant risk of pollution of *controlled waters*.

Appeals against a notice served by NRW

An individual may appeal to Welsh Ministers against a *notice* served by NRW. If an individual wishes to appeal against a *notice* served on them by NRW it must be done in writing within 28 days from the day after the date on which the *notice* was served. You and NRW have the right to request an oral hearing by the person appointed to decide your appeal. Contact details and further information about appeals in Wales are available in **Annex 4.**

Part 1 – Requirements from 1 April 2021

1.1	**Storage of *Silage* and *Slurry***
1.1.1	Storage of Silage
1.1.2	Notifying Natural Resources Wales (NRW) of the construction of any new *silo* or *slurry* storage system
1.2	**Spreading of Fertiliser**
1.2.1	When and where to spread fertiliser
1.2.2	Incorporating organic manure into bare soil or stubble
1.2.3	Closed period for spreading *manufactured Nitrogen fertiliser*
1.3	**Record Keeping from 1 April 2021**

The transition periods do not apply to any agricultural land in an area previously designated as a Nitrate Vulnerable Zone (NVZ).

1.1 Storage of *Silage* and *Slurry*

1.1.1 Storage of *Silage*

A person who has custody or control of *silage* must ensure they comply with the general requirements set out in **Annex 4**. Other than *silage* stored temporarily in a container, trailer or vehicle in connection with its transport around the farm or elsewhere it must kept in a structure that satisfies the requirements set out at **Annex 5.**

1.1.2 Notifying Natural Resources Wales (NRW) before the construction or modification of any new *silo* or *slurry* storage system

A minimum of 14 days' *notice* must be issued to Natural Resources Wales (NRW) in writing **before** construction of a new, substantially enlarged or reconstructed store containing *slurry* or *silage* begins.(see **Annex 8** for NRW contact details). This applies to any *silo* or *slurry* storage system whose construction is to begin on or after 28 April 2021("a new or improved store").

It is strongly recommended that you minimise the risk of constructing an installation which is not compliant and of receiving a *notice*, by involving NRW early in the planning stage. Note if you require planning permission NRW is a statutory consultee in the planning process.

1.2. Spreading of Fertiliser

1.2.1 When and where to spread fertiliser

Before *spreading* fertiliser, a field inspection should be carried out to consider the risk of causing pollution or damage to the soil.

Fertiliser must not be spread on land if there is a significant risk of pollution, taking into account the slope of the land, particularly if the slope is more than 12°(equivalent to "20%" or "1 in 5"); ground cover; the proximity to surface water; the weather conditions; the soil type; and the presence of land drains.

Fertiliser must not be spread if the soil is *waterlogged*, flooded or snow covered, is frozen or has been frozen for more than 12 hours in the previous 24 hours.

Manufactured nitrogen fertiliser must not be spread within 2 metres of surface water.

Organic manure must not be spread within 50 metres of a borehole, spring or well or within 10 metres of surface water (6m if precision *spreading*).

1.2.2 Incorporating *organic manure* into bare soil or stubble

Poultry manure, *slurry* and liquid digestate applied onto the surface of bare soil or stubble (but not sown) must be incorporated into the soil as soon as practicable, and within 24 hours at the latest, unless *precision spreading equipment* is used. Any other *organic manure* applied to bare soil or stubble (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, 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.

1.2.3 Closed periods for spreading <u>manufactured</u> nitrogen fertiliser

You must not spread *manufactured nitrogen fertiliser* on land during the following periods (all dates inclusive)—

a) in the case of *grass*land, from 15 September to 15 January, or
b) in the case of tillage land, from 1 September to 15 January.

Spreading manufactured fertiliser during these periods is permitted on the crops specified in **Table A** below provided the maximum rate is not exceeded.

Spreading during those periods on crops not in **Table A** is permitted on the basis of written justification of crop requirement from a person who is a member of the Fertiliser Advisers Certification and Training Scheme (FACTS).

Table A

Crop	*Maximum nitrogen rate (kg/hectare)*
Oilseed rape, winter**(a)**	30
Asparagus	50
Brassica**(b)**	100
*Grass***(a)(c)**	80
Over-wintered salad onions	40
Parsley	40
Bulb onions	40

(a) Nitrogen must not be spread on these crops after 31 October.
(b) An additional 50kg of nitrogen per hectare may be spread every four weeks during the closed period up to the date of harvest.
(c) A maximum of 40kg of nitrogen per hectare may be spread at any one time.

1.3 Record Keeping Required

The records required from 1 April 2021 include;

- A copy of *notice* to NRW of any planned new construction of a *slurry* or *silage* storage system.

Part 2 – Requirements from 1 January 2023

2.1	**Risk Maps**
2.1.1	How to produce a Risk Map
2.2	**Controlling the spread of Nitrogen fertiliser**
2.3	**Storage of *organic manure***
2.4	**Temporary field heaps**
2.5	**Nitrogen Limits**
2.6	**Import/Export of Manure**
2.7	**Nutrient Management Plans**
2.7.1	Your Nitrogen Management Planning and Recording
2.7.2	How to produce your Nutrient Management Plan - Nutrient applications restricted to crop limits
2.8	**Record Keeping Requirements from 1 January 2023**

The transition periods do not apply to any agricultural land in an area previously designated as a Nitrate Vulnerable Zone (NVZ).

2.1 Risk Maps

If you *spread organic manure* on your *holding* you must produce and maintain a map of the *holding* (a "risk map"). Risk maps must be produced and can be designed to enable you to comply with other measures as well as these Regulations. A copy must be available on request.

Changes to the total land area of the *holding* must be updated within one month.

The risk map must show as a minimum:

- each field, with its area in hectares;
- all surface waters;
- any boreholes, springs or wells on the *holding* or within 50 metres of the *holding* boundary;
- areas with *sandy* or *shallow soils;*
- land with an incline or greater than 12^{o} (equivalent to "20%" or "1 in 5");
- land within 10 metres of surface waters;
- land within 50 metres of a borehole, spring or well;
- land drains (other than sealed impermeable pipes);

- sites suitable for temporary field heaps, if this method of storing manure is to be used; and
- *land that has a low run-off risk* if such land is to be used when calculating *slurry* storage requirements.

2.1.1 How to produce your risk map.

Part 5 of **Annex 2** of this Guidance gives detailed instructions on how to produce your risk map.

2.2 Controlling the spread of Nitrogen fertiliser

Any person spreading nitrogen *fertiliser* must do so in as accurate manner as possible. *Slurry* spreading equipment must have a low spreading trajectory that is below 4 metres from the ground. *Spreading* equipment with a trajectory of more than 4 metres from the ground may be used on land that has a low run off risk and where the equipment does not have an average application rate of more than 2mm per hour.

2.3 Storage of *Organic Manure (*other than *slurry)*

Organic manure (other than *slurry*), or any bedding contaminated with any *organic manure*, must be stored in a vessel; in a covered building; on an impermeable surface; or in a *temporary field site* if it can be stacked in a free standing heap without slumping. Note any liquid arising from organic manure e.g. liquid fraction from weeping wall store or liquid arising from any solid manure stored on an impermeable surface is classed as *slurry* and must be contained appropriately.

Other than for solid manure stored in a temporary field heap, records must be maintained of the amount of manure that will be produced by the anticipated number of animals during the *storage period* to calculate the storage requirement **using standard figures in Annex 2.** Taking account of any intended export of manure and any spread to land that has been identified as low risk. Calculation tables are available in **Annex 2,** additionally for permanently housed *livestock* you may use software approved by the Welsh Government for the purpose of calculating storage.

What	When
On a *holding* with *livestock*, the amount of manure that will be produced by the anticipated number of animals that will be kept in a building or on a hard standing during the *storage period* using the	Animals introduced onto the *holding* for the first time, must be included in the calculation within one month.

standard figures in **Tables 1.1, 1.2. and 1.3 of Annex 2.**	
Amount of storage capacity (vessels and hard standings) required to enable compliance with the requirements, taking into account: a) the amount of manure intended to be exported from the *holding*; b) the amount of manure intended to be *spread* on *land that has a low run-off risk;and* c) in the case of a *slurry* vessel, the amount of liquid other than *slurry* likely to enter the vessel.	Animals introduced onto the *holding* for the first time, must be included in the calculation within one month.
Current capacity for storage on the *holding*	If your storage capacity changes, you must record the change within 1 week.
On a *holding* with *livestock* you must record, for the previous *storage period*, the number and category of animals in a building or on a hard standing.	Before 30 April each year

2.4 Temporary Field Heaps

Solid *organic manure* may be stored in temporary field heaps if it can be stacked in a free standing heap without slumping and meets the following requirements

Temporary field heaps **must not** be located:

- in a field liable to flooding or becoming *waterlogged*;
- within 50m of a spring, well or borehole;
- within 10m of surface water or a land drain (other than a sealed impermeable pipe); or
- within 30m of a *watercourse* on land identified on the **risk map** as having an incline of greater than 12°(equivalent to "20%" or "1 in 5") and
- the surface area should be as small as reasonably practicable to minimise leaching and run off caused by rainfall.

The temporary field heap **must not be located in any single position for more than 12 consecutive months** or in the same place as an earlier one constructed within the last two years.

Topsoil must not be removed from the ground upon which a temporary field heap is to be constructed.

Solid *poultry* manure that does not contain bedding and is stored in a temporary field heap must be covered with an impermeable material. See FAQ for further information.

What	When
On a *holding* with *livestock* you must record the sites used for field heaps and the dates of use and highlighted on the risk map.	Before 30 April each year

2.5 Nitrogen Limits

2.5.1 Whole holding 'the 170 limit'

Across the whole *holding* you must not exceed a limit of **170kg of Nitrogen per hectare** from all *livestock* manure, including direct excreta from animals on to the land and the *spreading* of *manure* within any calendar year (starting 1 January). See **Annex 2** for tables; additionally you may use software approved by the Welsh Government for permanently housed *livestock*.

See **FAQ document** for further details

2.5.2 The individual hectare limit 'the 250 limit'

A limit of 250kg per individual hectare is applied to the *spreading* of *organic manure* for any 12 month rolling period. This can be demonstrated in your Nutrient Management Plan.

What	When
You must maintain a record of the total size of the *holding*. The calculation of land area should exclude surface waters, hard standings, buildings, roads and ungrazed woodland.	Changes must be recorded within one month
You must make a record of:	By 30 April each year

a) the number and category (according to **Table 2.2**) of the animals on the *holding* during the previous calendar year b) the number of days each animal spent on the *holding*	
You must then calculate the amount of nitrogen in the manure produced by the animals on the *holding* during the year using the standard figures in **Table 2.3**	By 30 April each year
Alternatively, in the case of permanently housed pigs or *poultry*, you may use: a) software approved by the Welsh Government (in which case a printout of the results must be kept) or b) in the case of a system of keeping *livestock* that only produces solid manure[3], sampling and analysis in accordance with **Annex 3 of this Guidance**. You must make a record of the calculations and how the final figures were arrived at.	By 30 April each year

2.6 Import/Export of manure

You must record the following within 1 week for both the import and export of *organic manure* from your *holding* including:

- Type and amount of *livestock* manure;
- The date livestock manure is sent off or brought onto the *holding;*
- The nitrogen content (see **Annex 2** for calculation tables);
- Name and address of the recipient; and
- Details of any contingency plan if the export is refused

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, therefore you should give serious consideration to this option and weigh up the benefits against the risks. There are many diseases, some

[3] Material that can be stacked in a freestanding heap and that does not drain liquid

with significant impact and long-term effects that may be disseminated by this route (even if applied to *grass*land 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; and
- Ensuring the manure is spread to tillage land or to *grass*land used for forage conservation, i.e. avoid animals having access to land that has received *manure/slurry* for as long as possible.

What	When
If you intend to import or export manure or *slurry* you must record: a) Type and amount of *livestock* manure; b) The date it is sent off or brought onto the holding; c) The nitrogen content (see **Annex 2** for calculation tables); d) Name and address of recipient; and e) Details of any contingency plan if an export is refused.	Within 1 week of the *slurry/manure* import/export

2.7 Nutrient Management Planning

2.7.1 Your Nitrogen Management Plan (NMP)

The Nitrogen Management Plan (NMP) is used to demonstrate your compliance with the Regulations.

You will need to determine the optimum amount of nitrogen that should be spread on the crop (including *grass*land, taking into account the Soil Nitrogen Supply (SNS) and produce a written plan for the *spreading* of the *nitrogen fertiliser* for each calendar year before any *spreading* takes place. The plan may include other nutrients for ease of management.

Your NMP must provide:

- A field reference;
- Area of the field ;

- Soil type;
- Type of crop;
- Previous crop;
- The soil nitrogen supply and the method used to establish this figure;
- The anticipated month the crop will be planted;
- The anticipated yield (if arable);
- The optimum amount of nitrogen required by the crop taking into account the SNS;
- Area on which the *organic manure* will be spread;
- Quantity of *organic manure* to be spread;
- Planned date for *spreading* (month);
- Type of *organic manure;*
- Total Nitrogen content and available Nitrogen of *organic manure*;
- Amount of manufactured fertiliser required;
- Amount of manufactured fertiliser applied; and
- Total nitrogen spread on a *holding*

2.7.2 Maximum Nitrogen limits by crop type

The total amount of nitrogen permitted to be spread on any crop must not exceed the maximum nitrogen limit. See **Annex 2** for limits and calculations.

You must record the *spreading* of all *nitrogen fertiliser*s on your *holding* within 1 week of the *spreading* occurring.

What	When
If you intend to *spread nitrogen fertiliser* you must: a) calculate the amount of nitrogen in the soil that is likely to be available for uptake by the crop during the growing season (the **"Soil Nitrogen Supply"**); b) calculate the optimum amount of nitrogen that should be *spread* on the crop, taking into account the amount of nitrogen available from the **Soil Nitrogen Supply;** and c) produce a "plan" (see below) for the *spreading* of *nitrogen fertiliser* for that growing season.	▪ **Permanent *Grassland*** - each year beginning 1 January before the first *spreading* of *nitrogen fertiliser.* ▪ **All crops other than permanent *grassland*** - before *spreading* any nitrogen fertiliser for the first time for the purpose of fertilising a crop planted or intended to be planted.

The "plan" must be in permanent form and must record: a) the reference or name of the relevant field; b) the "area of the field planted or intended to be planted" (see below); and c) the type of crop.	▪ **Permanent *Grassland*** - each year beginning 1 January before the first *spreading* of *nitrogen fertiliser.* ▪ **All crops other than permanent *grassland*** - before *spreading* any nitrogen fertiliser for the first time for the purpose of fertilising a crop planted or intended to be planted.
For the "area of the field planted or intended to be planted" the plan must record: a) the soil type; b) the previous crop (if the previous crop was *grass*, whether it was managed by cutting or grazing); c) the **Soil Nitrogen Supply** and the method used to establish the figure; d) the anticipated month the crop will be planted; e) if arable, the anticipated yield; and f) the optimum amount of nitrogen that should be *spread* on the crop taking into account the amount of nitrogen available from the **Soil Nitrogen Supply.**	▪ **Permanent *Grassland*** - each year beginning 1 January before the first *spreading* of *nitrogen fertiliser* ▪ **All crops other than permanent *grassland*** - before *spreading* any nitrogen fertiliser for the first time for the purpose of fertilising a crop planted or intended to be planted.

Before *spreading organic manure*, you must calculate the amount of nitrogen from the manure that is likely to be available for crop uptake in the growing season in which it is *spread*, by recording: a) the area on which the *organic manure* will be *spread;* b) the quantity of *organic manure* to be *spread;* c) the planned date (month) for *spreading;* d) the type of *organic manure;* e) the total nitrogen content of the *organic manure; and* f) the amount of nitrogen likely to be available from the manure intended to be *spread* for crop uptake in the growing season in which it is *spread.*	on each occasion before *spreading organic manure.*
Before *spreading nitrogen fertiliser* you must record: a) the amount required[4]; and b) the planned date (month) for *spreading.*	on each occasion before *spreading nitrogen fertiliser.*
You must also keep records of actual events as follows: With regard to crops: a) the crop sown; and b) the date of sowing. With regard to *spreading organic manure*: a) the area on which *organic manure* is *spread;* b) the quantity of *organic manure spread;* c) the date(s); d) the methods of *spreading;* e) the type of *organic manure;*	 ▪ within one week of sowing a crop. ▪ within one week of *spreading.*

[4] This equates to i.e. the optimum amount of nitrogen required by the crop (taking into account the **Soil Nitrogen Supply**) less the amount of nitrogen that will be available for crop uptake from any *organic manure spread*

f) the total nitrogen content; and g) the amount of nitrogen that was available to the crop. With regard to *spreading* manufactured fertiliser: a) the date of *spreading; and* b) the amount of nitrogen *spread.*	▪ within one week of *spreading.*
If you have used *nitrogen fertiliser* you must record the yield achieved by an arable crop.	within one week of ascertaining the yield.
You must record how any *grassland* was managed in the previous calendar year.	before 30 April each year.

2.7.3 How to produce your Nitrogen Management Plan

Annex 2 of this Guidance provides a series of templates which will enable you to demonstrate compliance with the Regulations which involve planning, calculations and record keeping.

2.8 Record Keeping Requirements

The records required from 1 January 2023 include:

- for all *holdings* - Copies of all risk maps produced (Details on how to produce a risk map are available in **Annex 2**.);
- for all *holdings* – Before 30 April each year details of the number and type of animals on the *holding* from the previous calendar year the number of days spent on the *holding* - to demonstrate adherence to the 170kg/ha Nitrogen limit;
- for *holdings* with animals kept in a building or hardstanding during the *storage period* – the amount of manure that will be produced by the anticipated number of animals during the *storage period* and the storage capacity required;
- for *holdings* spreading *nitrogen fertiliser* - copies of all Nutrient Management Plans;
- for *holdings* engaging in the import or export of *organic manure* or *slurry* - records of all *slurry* imports and exports including dates of import/export, manure type and Nitrogen content.

All records must be stored for a minimum and of 5 years and must be made available for inspection if requested.

Please refer to the **FAQ document** for best practice on record keeping.

2.8.1 Exemption from recording of the actual spreading of organic or manufactured fertilisers

Holdings where in any calendar year

- 80% of the *agricultural area* of the *holding* is sown with *grass*;
- the total amount of *organic manure* applied to the *holding*, whether directly by animal or by *spreading*, is no more than 100kg/ha;
- the total amount of nitrogen in *manufactured fertiliser* applied to the *holding* is no more than 90kg/ha; and
- no *organic manure* is brought onto the *holding*

are exempt from having to record the actual *spreading* of organic or *manufactured nitrogen fertilisers*. You will still need to complete a Nutrient Management Plan.

All records must be stored for a minimum and of 5 years and must be made available for inspection if requested.

Please refer to the **FAQ document** for best practice on record keeping.

Part 3 – Requirements from 1 August 2024

3.1	**Closed periods for *spreading nitrogen fertiliser* (includes *slurry* and other *organic manure*s)**
3.1.1	Exemptions to the closed periods
3.1.2	Post closed period restrictions
3.2	**Storage capacity for *Slurry***
3.3	**The *storage period***
3.4	**Record keeping requirements from 1 August 2024**

The transition periods do not apply to any agricultural land in an area previously designated as a Nitrate Vulnerable Zone (NVZ).

3.1 Closed periods for *spreading* nitrogen fertiliser (includes *slurry* and other *organic manure*s with readily available nitrogen)

Organic manure with high readily available nitrogen (30% or more available N – see **Table A** and supporting text) must not be spread on land between dates specified in **Table B.**

Table A

Type of *livestock* manure*	**Amount of nitrogen available for crop uptake**
Cattle *slurry*	40%
Pig *slurry*	50%
Poultry manure	30%
Other *livestock* manure	10%

*For all other *organic manure*s use technical analyses provided by the supplier, RB209 values or using the sampling and analysis methodology at **Annex 3 of this Guidance** can be used.

Table B - do not spread *organic manures* with high readily available N during these periods

Soil type	***Grassland***	***Tillage land***
Sandy or *shallow soil*	1 September to 31December	1 August to 31December
All other soils	15 October to 15 January	1 October to 31January

3.1.1 Exemptions to the closed periods

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.

Exemptions to Organic Producers

Registered organic producers may spread *organic manure with high readily available nitrogen* at any time on crops listed **in Column 1 of Table C,** or other crops in accordance with written justification from a person who is a member of the Fertiliser Advisers Certification and Training Scheme (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 C

Crop	*Maximum nitrogen rate (kg/hectare)*
Oilseed rape, winter**(a)**	30
Asparagus	50
Brassica**(b)**	100
*Grass***(a)(c)**	80
Over-wintered salad onions	40
Parsley	40
Bulb onions	40

(a) Nitrogen must not be spread on these crops after 31 October.
(b) An additional 50kg of nitrogen per hectare may be spread every four weeks during the closed period up to the date of harvest.
(c) A maximum of 40kg of nitrogen per hectare may be spread at any one time.

3.1.2 Post closed period restrictions

From the end of the closed period until the end of February 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. There must be at least three weeks between each *spreading*.

3.2 The Storage Period

Sufficient storage must be provided for pigs and *poultry* manure produced on the *holding* between 1 October and 1 April (6 months), and for other manures produced in a yard or building on the *holding*, 1 October and 1 March (5 months) plus sufficient capacity to meet the *spreading* restrictions of the regulations.

The volume of the manure produced by the animals on the *holding* must be calculated in accordance with standard figures in **Annex 2.**

The store must also have the capacity to store any rainfall, washings or other liquid which enters the vessel (either directly or indirectly) during the *storage period*. Average rainfall data (1 October to March) is available via the Welsh Government DataMapWales mapping portal based upon the met office's 1981 – 2010 averaging period accessible via https://datamap.gov.wales/maps/974. The data is provided on to a 1km grid to reflect the wide geography of Wales and provide accurate localised data. Other recognised tools can be used to determine the minimum requirement, see accompanying **FAQ document** for details.

3.3 Storage Capacity for *Slurry*

You must have sufficient storage capacity to appropriately store the *slurry* produced which cannot be spread during the closed period, this is known as the *storage period* and to meet the other *spreading* restrictions of the Regulations for your farming system.

The store must also have sufficient capacity for all *slurry* produced and any rainwater or washings entering the store during the period.

The required storage capacity must be calculated using the anticipated *slurry* produced by animals on the *holding* during the *storage period* and any additional water inputs including rainwater run-off and washing water. Details for calculating the storage requirement are available within **Annex 2** or via suitable farm software.

Slurry must be stored in a system that satisfies the requirements set out at **Annex 6**.

Storage facilities are not necessary for *slurry* or *poultry* manure sent off the *holding* or spread on *land that has a low run-off risk* (provided that this is done in accordance with the other measures on *spreading*). However, storage facilities for an additional one week's manure must be provided as a contingency measure in the event of *spreading* not being possible on some dates.

Separation of *slurry* into its solid and liquid fractions must either be carried out mechanically or on an impermeable surface where the liquid fraction drains into a suitable receptacle.

See **FAQ** document for further details.

3.4 Record Keeping Requirements

The records required from 1 August 2024 include:

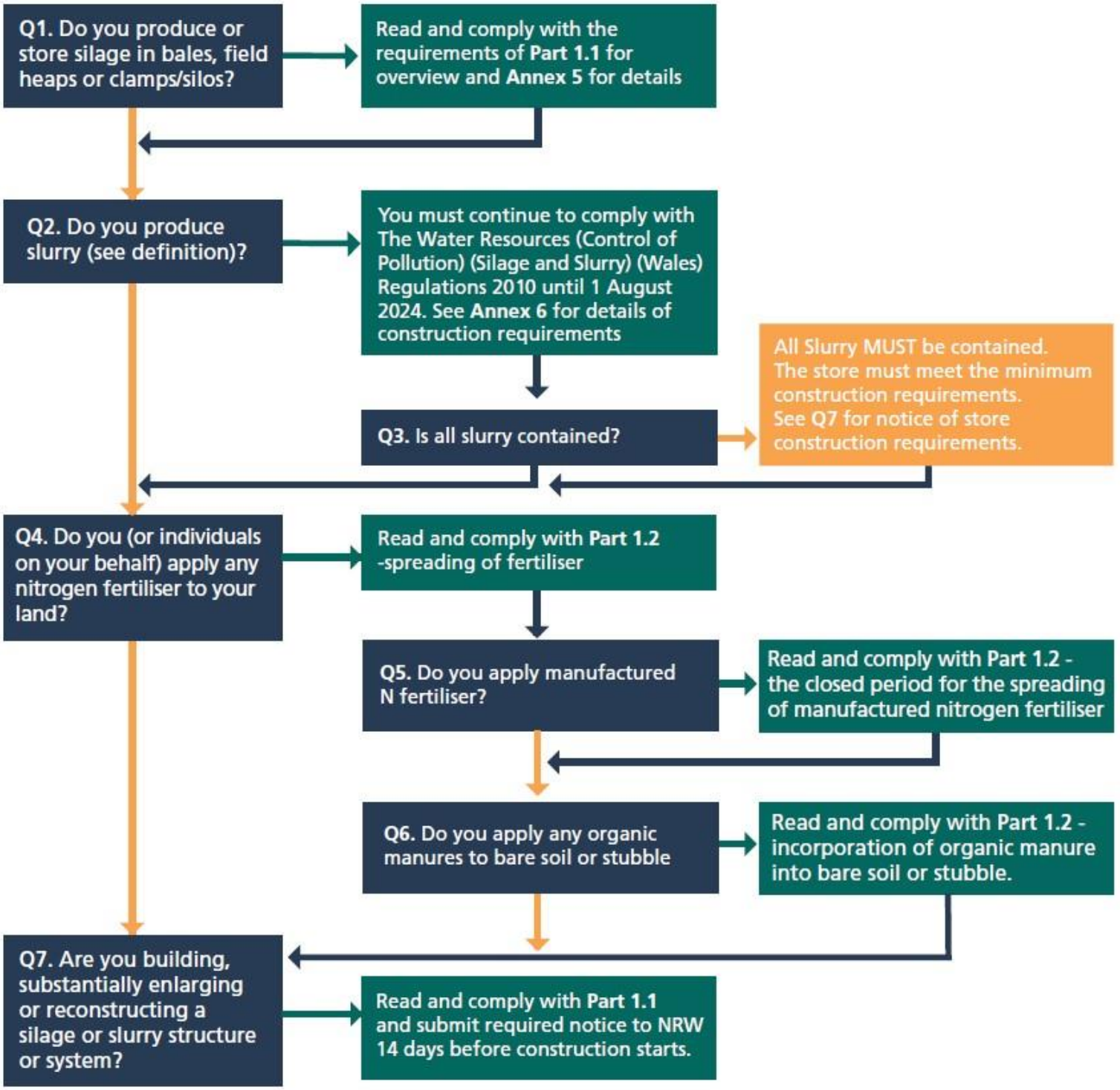
- For *holdings* with *slurry* storage systems – Calculations to demonstrate there is sufficient capacity to store all *slurry* to be produced by animals during the *storage period*. See **Annex 2**;
- For *holdings* with pigs, *poultry* or other housed animals with no *slurry* system – Calculations to demonstrate sufficient storage of all manure produced during the *storage period*. See **Annex 2.**

All records must be stored for a minimum of 5 years and must be made available for inspection if requested.

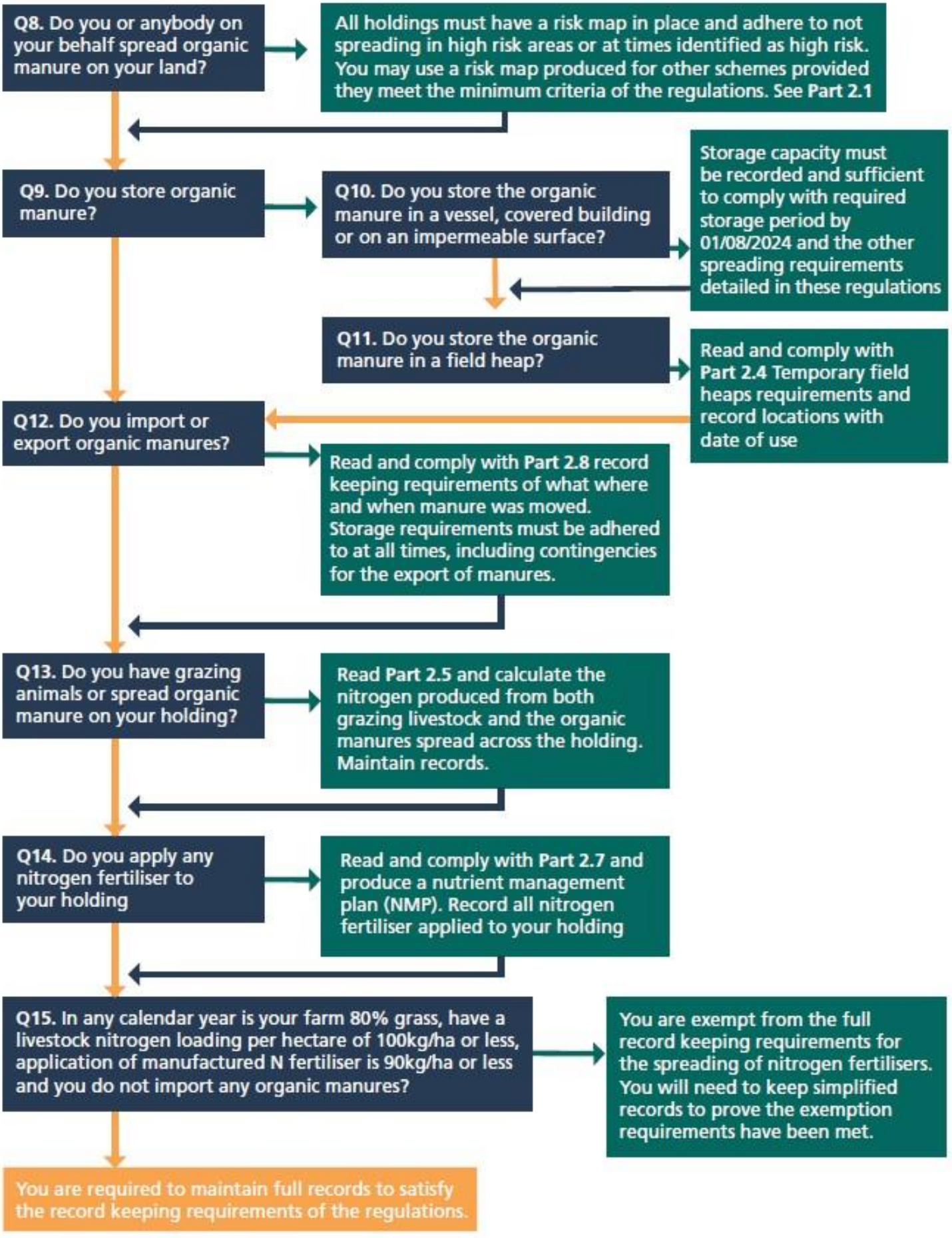
Please refer to the **FAQ document** for best practice on record keeping.

ANNEX 1

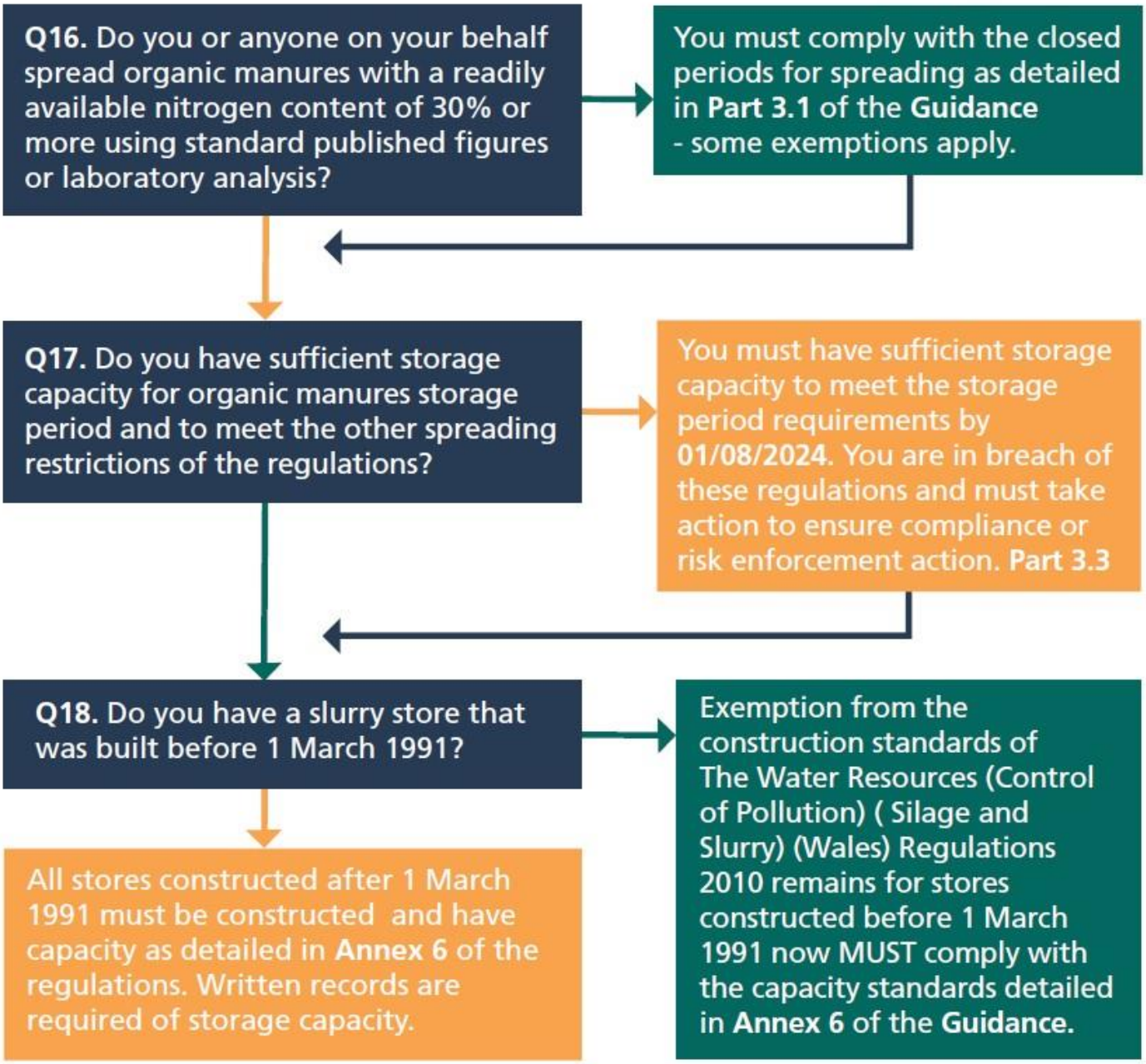
From 1 April 2021



From 1 January 2023



From 1 August 2024



ANNEX 2

TEMPLATES FOR PLANS, CALCULATIONS AND RECORD KEEPING

Introduction

This **Annex** provides a series of templates which when completed will enable you to demonstrate compliance with the Regulations which involve planning, calculations and record keeping.

The **Annex**:

a) provides templates for the plans and calculations you need to undertake;

b) provides standard sheets for keeping the necessary records; and

c) identifies areas where current farm practices could involve a breach of the Regulations.

Key questions at the start of each **Part** will identify which templates must be completed for you to satisfy the Regulations. At the start of each **Part** there is also a clear indication as to when each particular template must be completed and by when you must comply with the rules. As you progress through the **Annex** you should also note times in the future when updating is required or further records must be kept.

It is possible that you already prepare some of the calculations and plans, and keep the necessary records (for other schemes or initiatives). As long as these satisfy the Regulations, they can be used as an alternative to these templates.

In all cases records must be kept for at least five years.

***All tables provided in this Annex for calculation and record keeping purposes will be available in Excel format via the Welsh Government website https://gov.wales/land-management**

There is no need to submit these templates or any other records to Natural Resources Wales (unless requested to do so), however, they must be made available for inspection at any time.

Part 1 – Storage of *organic manure (including slurry)*

Requirement for plans, calculations and records

What	When
On a *holding* with *livestock*, the amount of manure that will be produced by the anticipated number of animals that will be kept in a building or on a hardstanding during the *storage period* using the standard figures in **Tables 1.1, 1.2. and 1.3.**	Animals introduced onto the *holding* for the first time, must be included in the calculation within one month.
Amount of storage capacity (*slurry* vessels and hardstandings) required to enable compliance with the requirements, taking into account: a) the amount of manure intended to be exported from the *holding*; b) the amount of manure intended to be *spread* on *land that has a low run-off risk*; and c) in the case of a *slurry* vessel, the amount of liquid other than *slurry* likely to enter the vessel.	Animals introduced onto the *holding* for the first time, must be included in the calculation within one month.
Current capacity for storage on the *holding*	If your storage capacity changes, you must record the change within 1 week.
On a *holding* with *livestock* you must record, for the previous *storage period*, the number and category of animals in a building or on a hardstanding.	Before 30 April each year
On a *holding* with *livestock* you must record the sites used for field heaps and the dates of use	Before 30 April each year

Q 1.1 Do you produce *slurry* from cattle, sheep, goats, deer or horses during the period 1 October to 1 March?

YES / NO

If "NO" proceed to **Q 1.4**

If "YES", you must undertake **Calculations 1.1 - 1.6**

Calculation 1.1

Complete **Table 1.1** to calculate the amount of *slurry* that will be produced by the anticipated number of animals that will be kept during the *storage period*. Guidance is provided in the box below the table.

Enter the figure from **Box 1A** below and divide by 1,000 to convert to cubic metres. Enter this figure in **Box 1B** below.

1A		÷ 1,000 =	**1B**		m^3

Table 1.1 - Cattle, sheep, goats, deer, horse *slurry* production (based on undiluted *slurry*)

Type of *livestock*		Col 1 Number of stock	Col 2 Number of days *slurry* collected in *storage period*	Col 3 Daily excreta volume (litres)	Col 4 Volume produced in *storage period* Col 1 x Col 2 x Col 3
Cattle					
Calf (all categories including veal) up to 3 months				7.0	
Dairy cow to first calf	From 3 months and less than 13 months			20.0	
	From 13 months and up to first calf			40.0	
Dairy cow after first calf reared	Annual milk yield over 9,000 litres			64.0	
	Annual milk yield 6,000 – 9,000 litres			53.0	
	Annual milk yield less than 6,000 litres			42.0	
Beef cows or steers[a] to 25 months	From 3 months and less than 13 months			20.0	
	From 13 months and less than 25 months			26.0	
Beef cows or steers[a] from 25 months	Females or steers[a] for slaughter			32.0	
	Females for breeding weighing 500 kg or less			32.0	
	Females for breeding weighing over 500 kg			45.0	
Bulls	Non-breeding 3 months and over			26.0	
	Breeding – from 3 months and less than 25 months			26.0	
	Breeding – from 25 months			26.0	
Sheep					
From 6 months up to 9 months				1.8	
From 9 months to first lambing, first tupping or slaughter				1.8	
After lambing or tupping[b]	Weighing less than 60 kg			3.3	
	Weighing over 60 kg			5.0	
Goats, deer, horses					
Goat				3.5	
Deer	Breeding			5.0	
	Other			3.5	
Horse				24.0	
Total volume of *slurry* from cattle, sheep, goats, deer, horses during *storage period*				**1A**	

a – steer = castrated male

b – in the case of a ewe, this figure includes one or more suckled lambs until the lambs are aged 6 months

Column 1 - for each category of *livestock* listed, enter the number likely to be kept on a *slurry* or part-*slurry* system during the *storage period*.

Column 2 - for each category of *livestock,* enter the total number of days during the *storage period* when *slurry* will be collected. For *livestock* housed on a 100% *slurry* system throughout the *storage period* this will be 152 days. For part-*slurry* systems or where *slurry* is not collected from *livestock* for a whole day or on all days during the *storage period* the number of days entered in this column should be adjusted accordingly.

Column 3 - these figures are the standard volumes of excreta produced for each category of *livestock* and must be used in the calculation.

Column 4 - for each category of *livestock*, multiply the figures in **Columns 1, 2 and 3** to give the total volume (in litres) of *slurry* produced by cattle, sheep, goats, deer and horses during the *storage period*.

Box 1A - enter the total of the figures in **Column 4**.

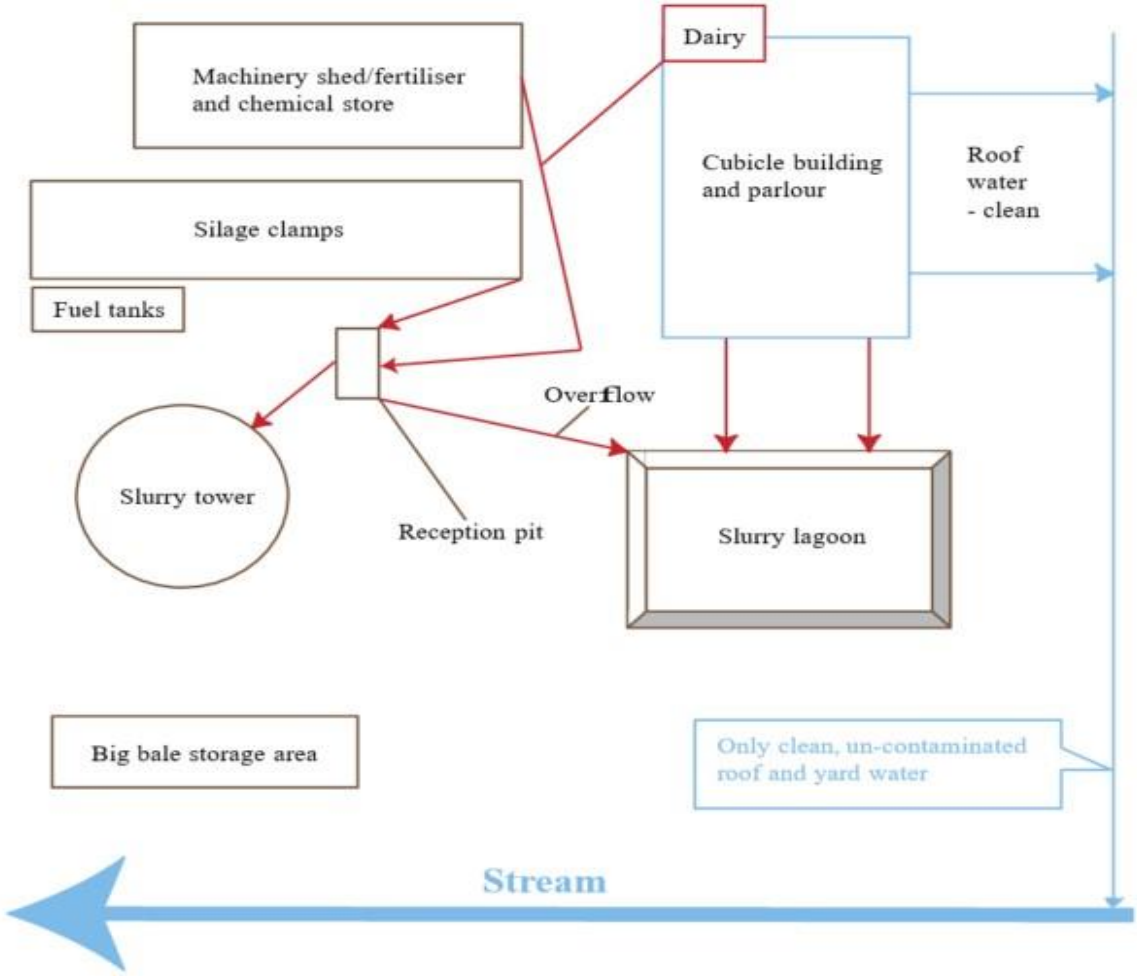
Calculation 1.2

This calculation provides the statutory minimum only and does not take into account all factors relevant to your ability to comply with the other requirements of the Regulations. Relevant factors should be taken into account, such as whether the store will be completely empty prior to the closed periods, the provision of additional storage to address the risk of poor weather preventing *spreading* of *slurry* following a late autumn *silage* cut and future rainfall predictions.

Calculate the average volume of rainfall[4] that enters your *slurry* store(s) during the *storage period* 1 October to 1 March.This can be calculated by preparing a plan of the farm buildings and yards and marking in red drains that carry dirty water and "foul" liquids and in blue drains that carry clean water. Work out the total area of yards and buildings and then deduct covered areas if rain falling on these roofs is collected and discharged to a clean water drain. Where rainfall onto roofs or clean yards does unavoidably drain to *slurry* store(s), this area must be included. You must also include the area of weeping wall stores, uncovered *silage* clamps, dungsteads/manure heaps and *slurry* stores. Enter this area at **Box 1C** below. In **Box 1D** enter the typical rainfall[5] (in metres) that occurs during the *storage period*. Multiply the figures in **Boxes 1C and 1D** and enter the result in **Box 1E** to give the run-off that enters the *slurry* store.

5 Average rainfall data is available via the Welsh Government lle mapping portal at https://datamap.gov.wales/maps/974. based upon the met office's 1980 – 2010 historical monthly averages. The data is provided on to a 1km grid to reflect the wide geography of Wales and provide accurate localised data. Other recognised tools can be used to determine the minimum requirement, see accompanying **FAQ** document for details.

Example of farm drainage plan



Area (m^2)	**1 C**		x	Average rainfall during *storage period*	**1 D**		=	**1E**		m 3

Note: on some farms all *lightly fouled water* may not enter *slurry* store(s) and the remainder may be directed to a separate dirty water store for regular field irrigation. You should ensure that anything entering a *lightly fouled water* store for regular irrigation in closed periods meets the Regulatory definition for *lightly fouled water* **i.e. lightly contaminated run-off from lightly fouled concrete yards or from the dairy parlour that is collected separately from *slurry*. It does not include drainage from yards or buildings used to house or feed *livestock*, liquids from weeping-wall stores, manure storage on hard standings, strainer boxes, *slurry* separators or *silage effluent*, all of which are rich in nitrogen.**

Q 1.2 Do you produce dairy wash water that enters the *slurry* store(s) during the *storage period*?

YES / NO

If "NO" proceed to **Q 1.3**

If "YES" you must undertake the following calculation:

Calculation 1.3

Calculate the volume of dairy wash water that enters the *slurry* store(s) during the *storage period*.

Typical wash water use from high volume hoses is 30 litres per cow per day and from low volume hoses is 20 litres per cow per day.

If you know the total amount (in cubic metres) of wash water used during the *storage period* (e.g. from water meter readings), enter this figure directly in **Box 1J**. Otherwise, enter the total number of dairy cows on your farm at **Box 1F** and at **Box 1G** enter the typical daily volume (in litres) used per cow. Multiply **Boxes 1F, 1G** and **1H** (the 152 days of the *storage period* divided by 1,000 to convert from litres to cubic metres) and enter the result at **Box 1J** to give the total volume of wash water that enters the *slurry* store(s).

Number of cows	**1F**		x	Daily wash water volume per cow	**1G**		x	**1H**	0.152	=	**1J**		m^3

Q 1.3 Does any other foul run-off enter the *slurry* store(s) during the *storage period*?

YES / NO

If "NO" proceed to **Calculation 1.5**

If "YES" you must undertake the following calculation:

Calculation 1.4

Estimate in cubic metres any other foul run-off that enters the *slurry* store(s) during the *storage period*. Include details in the box below and enter the figure in **Box 1K**

1K [ ] m^3

Calculation 1.5

Add together the figures in **Boxes 1B, 1E, 1J and 1K** to give the total volume of *slurry* produced during the *storage period*. Enter the result at **Box 1L**.

1L _____ m^3

Q 1.4 Do you produce any *slurry* from pigs during the period 1 October to 1 April?

YES / NO

If "NO" proceed to **Calculation 1.6**

If "YES" you must calculate the volume of *slurry* that will be produced using the standard figures in **Table 1.2** below. You should also remember to include the volume of rainfall, wash water[6] and any other foul run-off that enters a pig *slurry* store.

Table 1.2 Pig *slurry* production (based on undiluted *slurry*)

Type of *livestock*		**Daily Excreta Volume (litres)**
From 7 kg and less than 13 kg		1.3
From 13 kg and less than 31 kg		2.0
From 31 kg and less than 66 kg	Dry fed	3.7
	Liquid fed	7.1
From 66 kg	Intended for slaughter – dry fed	5.1
	Intended for slaughter – liquid fed	10.0
	Sows intended for breeding that have not yet had their first litter	5.6
	Sows (including litters up to 7 kg)	10.9
	Breeding boars from 66 kg up to 150 kg	5.1
	Breeding boars from 150 kg	8.7

The details of your calculation must be shown on a separate sheet and the total volume included in **Box 1M**. (All volumes should be in cubic metres)

[6] If you know the actual amount (in cubic metres), you can use this figure, alternatively, the following typical figures can be used:

Pig type	**Litres per pig place per week**	**Pig type**	**Litres per pig place per week**
Sows with litter up to 7 kg	10.0	Weaners (13 – 30 kg)	2.6
Maiden gilts and breeding boars	0.6	Growers (31 – 65 kg)	1.9
Weaners (7-12 kg)	2.0	Finishers (66 kg and over)	1.6

1M		m^3

Q 1.5 Have you entered a figure in either of **Boxes 1L or 1M**?

YES / NO

If "NO" proceed to **Q 1.6**

If "YES", you should undertake **Calculation 1.6**

Calculation 1.6

Calculate the volume of available *slurry* storage on the farm and enter the figure at **Box 1N** below.

For a store that is square or rectangular:
Length (m) x width (m) x depth (m) = volume in m^3

For a circular above-ground store:
3.142 x radius (m) x radius (m) x height (m) = volume in m^3

Appropriate allowance must be made for the freeboard requirement of 750 mm for earth-bank lagoons and 300 mm for concrete lagoons or above ground steel tanks. The freeboard volume must not count towards the available storage that satisfies the Regulations storage requirements. Also, measurements of an earth-bank lagoon should take into account that the sides slope inwards. Details of the calculations should be shown in the box below:

Available *slurry* storage capacity	=	**1N**		m^3

Conclusion

If the figure in **Box 1N** is less than the sum of the figures in **Boxes 1L and 1M**, then the farm does not have sufficient *slurry* storage to satisfy the Regulations. Before considering provision of additional storage or changing your farming system to make up the shortfall, the Regulations allow you to take the following into consideration and deduct appropriate volumes from either of **Boxes 1L or 1M**:

- If you **always** export some of your *slurry* during the *storage period* to another farm for land *spreading* or to another environmentally acceptable destination (see also **Part 6**)
- If you **always** use a mechanical separator to remove solids from the *slurry*, you may reduce the volume of required storage capacity (15-20% for cattle *slurry* and 5-10% for pig *slurry*) and manage the solid fraction in accordance with the Regulations requirements for solid manure
- If you **always** apply some *slurry* to *land that has a low run-off risk* following the end of the "closed period", you may deduct the volume applied, **but you must add as a contingency an extra one week's *slurry* production.**

If you are able to reorganise clean and foul yard areas, alter roof drainage, roof over fouled yard areas or cover *slurry* stores, you may be able to reduce the volume of rainwater entering your existing *slurry* stores(s).

If you do use any of the above options to reduce the amount of *slurry* stored, you should record your calculation and justification for amending the figures in the box below (or on a separate sheet)

- **When systems have been adapted, Calculations 1.1 - 1.6 should be re-worked as appropriate**
- **When the figure in Box N is equal to or greater than the sum of the figures in Boxes L and M the farm is compliant with the Regulations.**
- **Calculations 1.1 - 1.6 should be re-worked within one month of any additional *livestock* being introduced onto the farm.**
- **Any changes to the storage capacity must be recorded within one week.**

Q 1.6 Do you produce solid *poultry* manure during the period 1 October to 1 April?

YES / NO

If "NO" proceed to the final paragraph of this **Part**, titled "Record Keeping"

If "YES", you will need to calculate:

- the volume of *poultry* manure produced using standard figures in **Table 1.3** below
- the volume of *poultry* manure that needs to be stored using a density of 0.9 for laying hen excreta and 0.5 for *poultry* litter
- the capacity of existing stores
- and consider whether the existing capacity is sufficient. If there is a shortfall in capacity, you will need to show what action you intend to take so that your farm satisfies the requirements of the Regulations.

Table 1.3 – *Poultry* manure production (note - all figures include litter)

Type of *livestock*		**Daily manure produced by each animal (kg)**
Chickens used for production of eggs for human consumption	Less than 17 weeks	0.04
	From 17 weeks	0.12
Chickens raised for meat		0.06
Chickens raised for breeding	Less than 25 weeks	0.04
	From 25 weeks	0.12
Turkeys	Male	0.16
	Female	0.12
Ducks		0.10
Ostriches		1.60

Record Keeping

- **Before 30 April each year, the occupier of a *holding* with *livestock* must record, for the previous *storage period*, the number and category of animals in a building or hardstanding during the *storage period*. Existing farm records can be used for this purpose.**
- **Before 30 April each year, the occupier of a *holding* with *livestock* must record for the previous *storage period* the sites used for temporary field manure heaps (see Part 5 – risk map) and the dates of use**

If you used *temporary field heaps* for storing solid manure (i.e. material that can be stacked in a freestanding heap and that does not drain liquid), record here the dates. Note the site's location, start date and end date.

Part 2 – Total nitrogen limit for the whole *holding*

Requirement for plans, calculations and records

What	When
You must maintain a record of the total size of the *holding*. The calculation of land area should exclude surface waters, hardstandings, buildings, roads and ungrazed woodland.	Changes must be recorded within one month
You must make a record of: a) the number and category (according to **Table 2.2**) of the animals on the *holding* during the previous calendar year b) the number of days each animal spent on the *holding*	By 30 April each year
You must then calculate the amount of nitrogen in the manure produced by the animals on the *holding* during the year using the standard figures in **Table 2.3**	By 30 April each year
Alternatively, in the case of permanently housed pigs or *poultry*, you may use: a) software approved by the Welsh Government (in which case a printout of the results must be kept) or b) in the case of a system of keeping *livestock* that only produces solid manure[7], sampling and analysis in accordance with **Annex 3 of this Guidance**. You must make a record of the calculations and how the final figures were arrived at.	By 30 April each year

Note: the Regulations require that you base your calculation for the total nitrogen loading of your *holding* on actual figures for the previous calendar year. However, 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. It is therefore **strongly recommended** that you also plan for the year ahead by undertaking the calculations in this **Part** of the **Annex** in advance of each calendar year.

Calculation 2.1

Calculate the land area of the whole farm by completing **Table 2.1**. Enter the name or number of each field in **Column 1.** You should include rough grazing, rented land that is under your control during the calendar year, land under management

[7] Material that can be stacked in a freestanding heap and that does not drain liquid

agreements (e.g. Glastir, Tir Cynnal,Tir Gofal), and the appropriate proportion of any common land you use. In **Column 2** enter the area of each field in hectares, **but exclude areas given over to surface water, hard standings, buildings, roads or ungrazed woodland**. Enter the totals of field areas noted in **Column 2** of **Table 2.1** in **Box 2**.

Table 2.1

		Continuation columns	
Col 1	**Col 2**	**Col 1**	**Col 2**
Field name or number	**Area (ha)**	**Field name or number**	**Area (ha)**
		(sub-total carried forward)	
Sub-total		**Total area** **2A**	

Calculation 2.2

Calculate the *livestock* manure nitrogen capacity of the farm by multiplying the area noted at **Box 2A** by 170 and enter the result in **Box 2B** – this represents the *livestock* manure capacity of the farm.

Box 2A ____ ha x 170 kg/ha = **2B** ____ kg

Q 2.1 Do you keep any of the types of *livestock* listed in **Table 2.2** on your farm?

YES / NO

If “NO” proceed to **Q 2.2**

If “YES”, calculate the amount of nitrogen produced by *livestock* on your farm by completing **Table 2.3.** Guidance is provided in the boxes below the table.

Q 2.2 Do you import *livestock* manure onto the farm?

YES /NO

If “NO”, proceed to **Q 2.3**

If “YES”, complete **Table 2.3**

Table 2.3 - Imported *livestock* manure

Col 1	Col 2	Col 3	Col 4
Manure type	**Quantity (t or m^3)**	**Total nitrogen content (kg/t or kg/m^3)**	**Total nitrogen (kg)**
Total nitrogen of all imported *livestock* manure		**2G**		kg N / year

Column 1 - enter the manure type from **List 2.3.1** below that is imported.

List 2.3.1

Manure other than *slurry*	**Total Nitrogen in each tonne (kg)**
Manure from laying hens	19.0
Manure from turkeys or broiler chickens	30.0

Slurry	**Total Nitrogen in each m^3 (kg)**

Cattle	2.6
Pigs	3.6
Separated cattle *slurry* (liquid fraction)	1.5
Strainer box	2.0
Weeping wall	3.0
Mechanical separator	
Separated cattle *slurry* (solid fraction)	4.0
Separated pig *slurry* (liquid fraction)	3.6
Separated pig *slurry* (solid fraction)	5.0
Dirty water	0.5

Column 2 - enter the quantity of each manure type imported during the year. Use cubic metres for *slurry* or tonnes for other manure.

Column 3 - enter the total nitrogen content of each manure type. You must use the standard values from the list or, where acceptable, the results from sampling and analysis in accordance with **Annex 3 of this Guidance**

Column 4 - for each manure type enter the total quantity of nitrogen imported onto your farm by multiplying the figures **Column 2** by the figures in **Column 3**.

Box 2G - enter the total of the figures in **Column 4** to give a figure for the total nitrogen imported from all *livestock* manures.

Table 2.2 – Total nitrogen produced by *livestock* on the *holding*

Type of *livestock*		Col 1 Number of stock	Col 2 Total nitrogen produced by each unit of stock (kg/annum)	Col 3 Total nitrogen produced Col 1 x Col 2
Cattle				
Calf (all categories including veal) up to 3 months			8	
Dairy cow to first calf	From 3 months and less than 13 months		35	
	From 13 months and up to first calf		61	
Dairy cow after first calf reared	Annual milk yield over 9,000 litres		115	
	Annual milk yield 6,000 – 9,000 litres		101	
	Annual milk yield less than 6,000 litres		77	
Beef cows or steers[a] to 25 months	From 3 months and less than 13 months		33	
	From 13 months and less than 25 months		50	
Beef cows or steers[a] from 25 months	Females or steers[a] for slaughter		50	
	Females for breeding weighing 500 kg or less		61	
	Females for breeding weighing over 500 kg		83	
Bulls	Non-breeding 3 months and over		54	
	Breeding – from 3 months and less than 25 months		50	
	Breeding – from 25 months		48	
Sheep				
From 6 months up to 9 months			2.0	
From 9 months to first lambing, first tupping or slaughter			1.4	
After lambing or tupping[b]	Weighing less than 60 kg		7.6	
	Weighing over 60 kg		12.0	
Goats, deer, horses				
Goat			15.0	
Deer	Breeding		15.3	
	Other		12.0	
Horse			21.0	
			Sub-total (carried forward to continuation)	

a – steer = castrated male
b – in the case of a ewe, this figure includes one or more suckled lambs until the lambs are aged 6 months

Column 1 - enter the number of *livestock* kept on the farm. This figure should be adjusted (according to the number of days out of 365) if some of the stock were kept for only part of the year

Column 2 - gives the standard figure for total nitrogen produced by each category of *livestock*.

Column 3 - for each category of *livestock*, multiply the figure in **Column 1** by the figure in **Column 2** and enter the result in **Column 3**.

Box 2F – add up all the figures in **Column 3** and enter the result in **Box 2F**. This figure represents the total nitrogen produced from *livestock* on the farm.

Table 2.2 continued

Type of *livestock*		Col 1 Number of stock	Col 2 Total nitrogen produced by each unit of stock (kg/annum)	Col 3 Total nitrogen produced Col 1 x Col 2
			Sub-total (brought down)	
Pigs				
From 7 kg and less than 13 kg			1.5	
From 13 kg and less than 31 kg			5.2	
From 31 kg and less than 66 kg			8.8	
From 66 kg	Intended for slaughter		12.0	
	Sows intended for breeding that have not yet had their first litter		13.9	
	Sows (including litters up to 7 kg) fed on a diet supplemented with synthetic amino acids		16.1	
	Sows (including litters up to 7 kg) fed on a diet without synthetic amino acids		17.9	
	Breeding boars from 66 kg up to 150 kg		12.0	
	Breeding boars from 150 kg		17.5	
Poultry				
Chickens used for production of eggs for human consumption	Less than 17 weeks		0.23	
	From 17 weeks caged		0.41	
	From 17 weeks (not caged)		0.55	
Chickens raised for meat			0.39	
Chickens raised for breeding	Less than 25 weeks		0.31	
	From 25 weeks		0.74	
Turkeys	Male		1.37	
	Female		1.03	
Ducks			0.91	
Ostriches			1.40	
			Sub-total (carried forward to continuation) **2F**	

Column 1 - enter the number of *livestock* kept on the farm. This figure should be adjusted (according to the number of days out of 365) if some of the stock were kept for only part of the year

Column 2 - gives the standard figure for total nitrogen produced by each category of *livestock*.

Column 3 - for each category of *livestock*, multiply the figure in **Column 1** by the figure in **Column 2** and enter the result in **Column 3**.

Box 2F – add up all the figures in **Column 3** and enter the result in **Box 2F**. This figure represents the total nitrogen produced from *livestock* on the farm.

Q 2.3 Do you export *livestock* manure off the farm?

YES **/** NO

If "NO", proceed to **Q 2.4**

If "YES", complete **Table 2.4**

Table 2.4 - Exported *livestock* manure

Col 1	Col 2	Col 3	Col 4
Manure type	**Quantity (t or m^3)**	**Total nitrogen content (kg/t or kg/m^3)**	**Total nitrogen (kg)**
Total nitrogen of all exported *livestock* manure		**2H**	kg N / year

Column 1 - enter the manure types (from **List 2.3.1**) that is exported.

Column 2 - enter the quantity of each manure type exported during the year. Use cubic metres for *slurry* or tonnes for other manure.

Column 3 - enter the total nitrogen content of each manure type. You must use the standard values from **List 2.3.1** or, where acceptable, the results from sampling and analysis in accordance with **Annex 3 of this Guidance**

Column 4 - for each manure type enter the total quantity of nitrogen exported off your farm by multiplying the figures **Column 2** by the figures in **Column 3.**

Box 2H - enter the total of the figures in **Column 4** to give a figure for the total nitrogen exported from all *livestock* manures.

Q 2.4 Have you entered a figure in any of **Boxes 2F, 2G or 2H**?

YES / NO

If "NO" proceed to **Part 3**

If "YES" you should undertake **Calculation 2.3**

Calculation 2.3

Enter the total loading of *livestock* manure nitrogen for your farm in Box 2I by adding the figures in Boxes 2F and 2G, and subtracting the figure in Box 2H.

2F		+	**2G**		-	**2H**		=	**2I**		kg N/year

Conclusion

If **Box 2E** is greater than **Box 2I** then you are compliant with the Regulations on nitrogen loading.

If **Box 2E** is less than **Box 2I** then the *livestock* manure loading of your farm is greater than the limit of 170 kg/ha – you are not complying with the Regulations.

To become compliant you will need to consider options such as:

- For permanently housed pigs and *poultry* you may use nitrogen production figures generated by software approved by the Welsh Government;
- For *livestock* that produce only solid manure, you may use figures derived from sampling and analysis in accordance with **Annex 3 of this Guidance**;
- Reduction in stock numbers;
- Increasing the amount of manure exported from the farm;
- Decreasing the amount of manure imported onto the farm; and
- Increasing the land area of the farm.

Part 3 - Planning the *spreading* of *nitrogen fertiliser* (includes *manufactured fertiliser, slurry* and other *organic manures*)

Requirement for plans, calculations and records

What	When
If you intend to *spread nitrogen fertiliser* you must: a) calculate the amount of nitrogen in the soil that is likely to be available for uptake by the crop during the growing season (the **"Soil Nitrogen Supply"**); b) calculate the optimum amount of nitrogen that should be *spread* on the crop, taking into account the amount of nitrogen available from the **Soil Nitrogen Supply;** and c) produce a "plan" (see below) for the *spreading* of *nitrogen fertiliser* for that growing season	▪ **Permanent *Grassland*** - each year beginning 1 January before the first *spreading* of *nitrogen fertiliser* ▪ **All crops other than permanent *grassland*** - before *spreading* any nitrogen fertiliser for the first time for the purpose of fertilising a crop planted or intended to be planted.
The "plan" must be in permanent form and must record: a) the reference or name of the relevant field; b) the "area of the field planted or intended to be planted" (see below); and c) the type of crop	▪ **Permanent *Grassland*** - each year beginning 1 January before the first *spreading* of *nitrogen fertiliser* ▪ **All crops other than permanent *grassland*** - before *spreading* any nitrogen fertiliser for the first time for the purpose of fertilising a crop planted or intended to be planted.

For the "area of the field planted or intended to be planted" the plan must record: a) the soil type; b) the previous crop (if the previous crop was *grass*, whether it was managed by cutting or grazing); c) the **Soil Nitrogen Supply** and the method used to establish the figure; d) the anticipated month the crop will be planted; e) if arable, the anticipated yield; and f) the optimum amount of nitrogen that should be *spread* on the crop taking into account the amount of nitrogen available from the **Soil Nitrogen Supply**	▪ **Permanent *Grassland*** - each year beginning 1 January before the first *spreading* of *nitrogen fertiliser* ▪ **All crops other than permanent *grassland*** - before *spreading* any nitrogen fertiliser for the first time for the purpose of fertilising a crop planted or intended to be planted.
Before *spreading organic manure*, you must calculate the amount of nitrogen from the manure that is likely to be available for crop uptake in the growing season in which it is *spread*, by recording: a) the area on which the *organic manure* will be *spread;* b) the quantity of *organic manure* to be *spread;* c) the planned date (month) for *spreading;* d) the type of *organic manure;* e) the total nitrogen content of the *organic manure; and* f) the amount of nitrogen likely to be available from the manure intended to be *spread* for crop uptake in the growing season in which it is *spread*	▪ on each occasion before *spreading organic manure*
Before *spreading nitrogen fertiliser* you must record: a) the amount required[8]; and b) the planned date (month) for *spreading*	▪ on each occasion before *spreading nitrogen fertiliser*

[8] This equates to i.e. the optimum amount of nitrogen required by the crop (taking into account the **Soil Nitrogen Supply**) less the amount of nitrogen that will be available for crop uptake from any *organic manure spread*

You must also keep records of actual events as follows: With regard to crops: a) the crop sown; and b) the date of sowing With regard to *spreading organic manure*[9]: a) the area on which *organic manure* is *spread;* b) the quantity of *organic manure spread;* c) the date(s); d) the methods of *spreading;* e) the type of *organic manure;* f) the total nitrogen content; and g) the amount of nitrogen that was available to the crop With regard to *spreading* manufactured fertiliser: a) the date of *spreading; and* b) the amount of nitrogen *spread*	▪ within one week of sowing a crop ▪ within one week of *spreading* ▪ within one week of *spreading*
If you have used *nitrogen fertiliser* you must record the yield achieved by an arable crop.	within one week of ascertaining the yield
You must record how any *grassland* was managed in the previous calendar year.	before 30 April each year

Q 3.1 Do you intend spreading nitrogen fertiliser (includes slurry and organic manure) on your holding?

YES / NO

If "NO" proceed to the final paragraph of this **Part** entitled **Record Keeping Requirements**

If "YES", complete **Table 3.1**. Guidance is provided in the boxes below the table.

[9] These requirements do not apply if in any calendar year 80% of the *agricultural area* of your holding is sown with *grass* and:

a) the total amount of nitrogen in *organic manure* applied to the holding, whether directly by animal or as a result of *spreading* is no more than 100 kg / ha
b) the total amount of nitrogen in manufactured nitrogen applied to the holding is no more than 90 kg/ha
c) you do not bring any *organic manure* onto the holding

Table 3.1 – Plan for the optimum amount of available nitrogen that should be *spread*

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9
Field name or number	**Area that will receive *nitrogen fertiliser* (ha)**	**Type of crop**	**Soil Nitrogen Supply (SNS)**	**Method of determining SNS**	**Month in which crop will be planted**	**If arable, anticipated yield**	**Optimum amount of nitrogen that should be *spread***	**Method of determining optimum nitrogen requirement**

Column 1 - enter the name, number or reference of the field. Every field on the *holding* where *nitrogen fertiliser* will be *spread* should be included in this column.

Column 2 - enter the area of the field that will receive *nitrogen fertiliser*. This will normally be the area that will be cropped (including *grassland*), but taking into account non-*spreading* areas – see **Risk Map at Part 5.**

Column 3 - enter the intended type of crop (including *grassland* and how it will be managed e.g. cutting, grazing).

Column 4 - enter the Soil Nitrogen Supply for the intended cropped area. This figure will need to be calculated separately (include calculations on a separate sheet).

This calculation will include the Regulatory requirements to record the soil type and previous crop.

Column 5 - note the method you used to determine the Soil Nitrogen Supply.

Column 6 - if you are intending to sow a crop (including a *grass* ley), note the month it will be sown.

Column 7 - if an arable crop is to be sown, note the anticipated yield.

Column 8 - enter the optimum amount of nitrogen that should be *spread* on the crop. This figure will need to be calculated separately (include calculations on a separate sheet) and should take into account the amount of nitrogen available from the Soil Nitrogen Supply.

Column 9 - note the method you used to determine the optimum amount of nitrogen that should be *spread* on the crop.

You can assess Soil Nitrogen Supply using an index value based on information about the soil type, previous cropping, previous manure and fertiliser use, and winter rainfall. Alternatively, the use of soil sampling and analysis is recommended where high or uncertain amounts of soil nitrogen are expected. This will need to include an estimate of the amount of nitrogen that is likely to become available for crop uptake due to the mineralisation of soil organic matter and from previous crop residues.

There is a wide variety of sources of information to help you assess the crop nitrogen requirement, including FACTS qualified advisers, PLANET software and the Nutrient Management Guidel - "RB209"

See **Annex 8** for contact details

Q 3.2 Do you intend *spreading organic manure* during the next growing season?

YES / NO

If "NO", proceed to **Q 3.3**

If "YES", complete **Table 3.2 (use a separate line for each dressing)**

There is a variety of sources of information to help you assess crop available nitrogen in *organic manure*. These include FACTS qualified advisers, PLANET software and the Nutrient Management Guide - "RB209". See **Annex 8** for contact details

Table 3.2 - Plan for available nitrogen from *organic manure*s

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6
Field name or number	**Area on which *organic manure* will be *spread* (ha)**	***Organic manure* that will be *spread***			**Total amount of crop available nitrogen in the growing season**
		Type	**Date(s) of *spreading***	**Quantity (t)**	

Column 1 - enter the name, number or reference of the field. Every field on the *holding* where *organic manure* will be *spread* should be included in this column.

Column 2 - enter the area of the field that will receive *organic manure*, but taking into account non-*spreading* areas – see **Risk Map at Part 5.**

Column 3 - note the type(s) of *organic manure* that will be *spread* (you may use the categories listed in **Table 4.2**).

Column 4 - note the intended date(s) for *spreading*.

Column 5 - enter the quantity you intend to *spread*.

Column 6 - enter the total amount of crop available nitrogen that will be *spread*. This figure will need to be calculated separately (include calculations on a separate sheet).

Q 3.3 Do you intend *spreading* manufactured fertiliser during the next growing season?

YES / NO

If "NO" proceed to the final paragraph of this **Part** entitled **Record Keeping Requirements**

If "YES", complete **Table 3.3**. Guidance is provided in the boxes below the table.

Record Keeping Requirements

After you have *spread nitrogen fertiliser*, you are required to keep records. You can do this by completing **Table 3.4**. Alternately, there are other tools available to help you with record keeping requirements.

See the **FAQ document** which accompanies this Guidance for details.

Plans, calculations and records from this Part will also enable you to identify whether you are compliant with the Regulatory rule that stipulates:

You should ensure that in any twelve month period[10], the total amount of nitrogen in *organic manure spread* on any given hectare on the *holding* must not exceed 250kg.

You should note that only the ***spreadable*** area (not necessarily the **whole** area) counts towards the limit for each field. *Spreadable* areas are identified in **Part 5** of this **Annex.**

[10] a rolling 12 month period applies

Table 3.3 – Plan for manufactured fertiliser

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7
Field name or number	**Area on which manufactured fertiliser will be *spread* (ha)**	**Optimum amount of nitrogen that should be *spread* (kg)**	**Total amount of crop available nitrogen from *organic manure* (kg)**	**Optimum amount of manufactured fertiliser required (kg) Col 3 – Col 4**	**Actual amount of manufactured fertiliser that is planned to be *spread* (kg)**	**Planned date of *spreading***

Table 3.4 – Record of actual *nitrogen fertiliser* applications

Field name or number	Crop (including *grassland*)			*Organic Manure**							Manufactured fertiliser*	
	Type	Date Sown	Yield (if arable) or management (if *grass*)	Area *spread (ha)*	Quantity *spread (t)*	Date(s) *spread*	Method of *spreading*	Type	Total nitrogen content (kg)	Available nitrogen (kg)	Date *spread*	Amount of nitrogen *spread (kg/ha)*

Part 4 -The "Nmax" limit

Q 4.1 The nitrogen application rates (from *manufactured nitrogen fertiliser* and *organic manure*[12]) noted in **Part 3 must** for the total area of each type of crop grown on the *holding*, be less than the limits (taking permitted adjustments into account where necessary) set out in **Table 4.1.** If some or all of the crop available nitrogen is supplied by *organic manure*, then the total amount of nitrogen set out in **Table 4.2** must be assumed[13], with the percentage available nitrogen as set out in **Table 4.3.**

YES / NO

If "YES", you can proceed to **Part 5**

If "NO", you are advised to complete **Calculation 4** below.

Table 4.1 – The "Nmax" limits

Crop	Permitted amount of nitrogen (kg/ha) [a]	Notes	Standard yield (t/ha)
Asparagus	150		n/a
Autumn or early winter sown wheat	220	b, c, d	8.0
Beetroot	350		n/a
Brussels sprouts	350		n/a
Cabbage	350		n/a
Calabrese	350		n/a
Cauliflower	350		n/a
Carrots	150		n/a
Celery	250		n/a
Courgettes	250		n/a
Dwarf bean	250		n/a
Field beans	0		n/a
Forage maize	150		n/a
Grass	300	f	n/a
Leeks	350		n/a
Lettuce	250		n/a
Onions	250		n/a
Parsnips	250		n/a
Peas	0		n/a
Potatoes	270		n/a
Radish	150		n/a
Runner beans	250		n/a
Spring sown wheat	180	c, d	7.0
Spring barley	150	c	5.5
Sugar beet	120		n/a
Swedes	150		n/a
Sweetcorn	250		n/a
Turnips	250		n/a

13 This rule now applies to all *organic manures* as opposed to *livestock* manure only

14 As an alternative to the figures in **Table 4.2**, the results of sampling and analysis can be used as long as this is done in accordance with **Annex 3 of this Guidance**

Winter barley	180	b, c	6.5
Winter oilseed rape	250	e	3.5

Notes to Table 4.1

a) an additional 80 kg/ha is permitted to all crops grown in fields if the current or previous crop has had straw or paper sludge applied to it

b) an additional 20 kg/ha is permitted on all fields with *shallow soil* (other than *shallow soils* over sandstone)

c) an additional 20 kg/ha is permitted for every tonne that the expected yield exceeds that standard yield

d) an additional 40 kg/ha is permitted to milling wheat varieties

e) this is inclusive of any nitrogen that is applied as an exemption to the closed period for *manufactured nitrogen fertiliser*. The permitted amount may be increased by up to 30 kg/ha for every ½ tonne that expected yield exceeds standard yield

f) an additional 40 kg/ha is permitted to *grass* that is cut at least three times per year.

Table 4.2 – Total nitrogen content of *livestock* manures

Manure other than *slurry*	**Total nitrogen in each tonne (kg)**
Manure other than *slurry* from:	
Cattle	6.0
Pigs	7.0
Sheep	7.0
Ducks	6.5
Horses	7.0
Manure from laying hens	19.0
Manure from turkeys or broiler chickens	30.0
Slurry	**Total nitrogen in each m^3 (kg)**
Cattle	2.6
Pigs	3.6
Separated cattle *slurry* (liquid fraction)	
Strainer box	1.5
Weeping wall	2.0
Mechanical separator	3.0
Separated cattle *slurry* (solid fraction)	4.0
Separated pig *slurry* (liquid fraction)	3.6
Separated pig *slurry* (solid fraction)	5.0
Lightly fouled water	0.5

Table 4.3 – Percentage of the total nitrogen content of *livestock* manures that is available for crop uptake

Type of *livestock* manure	**Amount of nitrogen available for crop uptake in the growing season in which it is *spread***	
	Until 31 December	**From 1 January**
Cattle *slurry*	35%	40%
Pig *slurry*	45%	50%
Poultry manure	30%	30%
Other *livestock* manure	10%	10%

*For all other *organic manure*s use technical analyses provided by the supplier, RB209 values or using the sampling and analysis methodology at **Annex 3 of this Guidance** can be used.

Calculation 4

Complete **Table 4.4**. A separate table (photocopy if need be) should be completed for each crop type grown on the farm.

If the figure in **Box 4A** is greater than the figure in **Box 4B** then the Nmax limit will not be exceeded for the crop and you will be compliant with the Regulations.

If the figure in **Box 4A** is less than the figure in **Box 4B** then the Nmax limit will be exceeded for the crop and adjustments should be planned so as to avoid breaching the Regulations.

Table 4.4 – "Nmax" calculation for a particular crop type

Crop type …… Harvest Year ……..

Col 1	Col 2	Col 3	Col 4	Col 5	Col 6	Col 7	Col 8	Col 9	Col 10	Col 11
Field name or number	Cropped area (ha)	Nmax (from Table 4.1) (kg/ha)	Total Nmax (kg) Col 2 x Col 3	*Livestock* Manure nitrogen					Planned nitrogen from manufactured fertiliser (kg)	Total available nitrogen Col 9 + Col 10
				Type (from Table 4.2)	Quantity to be applied (t)	Total nitrogen content (from Table 4.2) (kg/tonne)	Nitrogen availability	Crop available nitrogen (Col 6 x Col 7 x Col 8) / 100		

Column 1 - enter the name, number or reference of each field growing the specified crop. **Column 2** - enter the cropped area of the field in hectares. **Column 3** - enter the Nmax rate (in kg/ha) for the crop as specified in **Table 4.1** (adjusted if this is permitted in the notes to the Table). **Column 4** - enter the total Nmax for the cropped area in the field by multiplying the figures in **Column 2** and **Column 3**. **Columns 5 to 9 refer to nitrogen from *livestock* manure.** **Column 5** - if *livestock* manure is applied, enter the type from the list in **Table 4.2**. Use separate lines if different types are applied to the same area annually. **Column 6** - enter the quantity to be applied to the cropped area in the field.	**Column 7** - enter the total nitrogen content (kg/t) of the *livestock* manure as set out in **Table 4.2**. **Column 8** - enter the percentage of nitrogen that is available for crop uptake as set out in **Table 4.3**. **Column 9** - enter the amount of available nitrogen from *livestock* manure by multiplying the figures in **Columns 6, 7 and 8** and dividing by 100. **Column 10** - enter the planned amount of nitrogen that will be applied as manufactured fertiliser - this figure should tally with **Column 6** of **Table 3.3**. **Column 11** - enter the total amount of available nitrogen that will be applied to the crop in that field by adding the figures in **Columns 9 and 10.** **Box4A** - enter the total amount of permitted nitrogen for the crop by totalling the figures in **Column 4.** **Box 4B** - enter the total amount of planned nitrogen for the crop by totalling the figures in **Column 11.**

Part 5 - Controlling the *spreading* of *nitrogen fertilisers* (includes *manufactured fertiliser, slurry* and other *organic manures*)

If you complete a risk map for any other purpose you may use that as evidence provided it meets the essential criteria below.

Requirements for plans, calculations and records

What	When
If you *spread organic manure* on your *holding* you must maintain (and keep a copy of) a map of the *holding* (a "risk map")	Any changes must be updated on the risk map within three months
The "risk map" must show: a) each field, with its area in hectares b) all surface waters c) any boreholes, springs or wells on the *holding* or within 50 metres of the *holding* boundary d) areas with *sandy* or *shallow soils* e) land with an incline or greater than 12° (equivalent to "20%" or "1 in 5") f) land within 10 metres of surface waters g) land within 50 metres of a borehole, spring or well h) land drains (other than sealed impermeable pipes) i) sites suitable for temporary field heaps, if this method of storing manure is to be used, see **Part 1** j) *land that has a low run-off risk* if such land is to be used when calculating *slurry* storage requirements see **Part 1**	Any changes must be updated on the risk map within three months
If you *spread organic manure* within 6 to 10 metres of surface water (as allowed for under the rules regarding Controlling the *spreading* of *nitrogen fertiliser* the risk map must identify the relevant land	Any changes must be updated on the risk map within three months

You will need to prepare a "risk map" of your *holding* as outlined below:

Step 1 – The holding - you will need a map (appropriate scales would be 1:2,500, 1:5,000 or 1:10,000) of your *holding* that shows:

- every field and every *watercourse* (including ditches);
- the area of each field in hectares; and

- any boreholes, springs or wells (including those on neighbouring land within 50m of your boundary)

Step 2 – Identifying watercourses – Essential - mark in red areas where the Regulations prohibit *spreading organic manure*:

- within 10 metres of either side of any *watercourse* (including ditches). If you intend *spreading organic manure* using *precision spreading equipment* 6 to 10 metres from a *watercourse*, you should cross-hatch this zone over the areas shaded red; and
- within 50 metres of any spring, well or borehole.

Step 3 – Identifying land types – Essential - mark in red areas where the Regulations prohibit *spreading organic manure*:

- areas with sandy or shallow soils;
- land with a slope of more than 12° (equivalent to "20%" or "1 in 5");
- areas with land drains (other than sealed impermeable pipes);

Mark in the colours of your choice the following features as required by the regulations.

- areas with *sandy* or *shallow soils*;
- sites suitable for temporary field heaps, if this method of storing manure is to be used (see **Part 2**); and
- *land that has a low run-off risk* if such land is to be used when calculating *slurry* storage requirements (see **Part 2**).

Step 4 – Identify other features - Optional: You can also mark in red other areas where it would **not** be appropriate to *spread organic manure including*:

- any areas where you may not be allowed to *spread* for reasons such as a tenancy agreement, an abatement *notice* due to smell, or a designation (e.g. Site of Special Scientific Interest);
- areas categorised as a "wildlife habitat" under an agri-environment agreement (e.g. Glastir), plus any other areas where an agreement prohibits *spreading* (e.g. low input land);
- areas where the surface is rocky or uneven so that equipment cannot be used effectively or safely; and
- fields or part fields which in the last 12 months have been pipe drained, mole drained or sub-soiled over drains.

Outline the boundaries of other areas where you would not normally *spread* and leave these areas white:

- areas ancillary to farming (e.g. buildings, tracks, roads);

- areas of woodland or orchards; and
- areas that are unsuitable because of location (e.g. they are too far from the farmstead) and are not normally used for operational reasons but may be brought into use at some point in the future.

Step 5 – Features from your Nutrient Management Plan – Optional - you can complete your risk map by including areas that are generally included in manure management plans. These are areas where *spreading* can only occur under certain conditions or where rates should be restricted. Some areas of the farm will be unsuitable for *spreading* at certain times of year, particularly in winter. These could vary from year to year, **but you must bear in mind the Regulatory "closed periods" when no *organic manure*s with over 30% readily available nitrogen eg *slurry* or *poultry* manure can be applied to any land**.

Part 6 - Importing or exporting *livestock* manure

Requirements for plans, calculations and records

What	When
If you bring *livestock* manure on to a *holding* you must record: a) the type and amount of *livestock* manure; b) the date it is brought onto the *holding;* c) the nitrogen content; and, if known; d) the name and address of the supplier	within one week
If you send *livestock* manure off a *holding* you must record: a) the type and amount of *livestock* manure; b) the date it is sent off the *holding;* c) the nitrogen content; d) the name and address of the recipient; and e) details of a contingency plan to be used in the event that an agreement for a person to accept the *livestock* manure fails	within one week
If the nitrogen content of the *livestock* manure brought on to a *holding* is not known you must ascertain it.	as soon as is reasonably practicable and record within one week
All nitrogen contents must be ascertained using either standard figures (see **Part 2**) or by sampling and analysis as set out in **Annex 3 of this Guidance**.	

If you import on to or export *livestock* **manure** off the *holding*, enter the required records in the box below.

ANNEX 3

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.

ANNEX 4

General Requirements for Storage of *Slurry* and *Silage*

Installations must meet the following requirements:

Durability Life

1. The Regulations require all new installations to be constructed with a durability life of at least 20 years. This means that the installation is expected to last – with proper maintenance – for 20 years without causing, or being at risk of causing, pollution, and continuing to comply with the requirements of the relevant schedule to the Regulations. If any part of a *silage effluent* tank is below-ground, the tank is expected to comply with the requirements of paragraphs 4 and 5 of schedule 1 for 20 years without maintenance. NRW provides a form to help you provide this information (see **Annex 6** for contact details).

Maintenance

2. When in use, installations must at all times meet the performance standards laid down in the Schedules to the Regulations (see **Annex 5-** Schedules taken from Regulations). For example, a requirement for impermeable bases must be met for all installations subject to the Regulations. Frequent inspections of your installations will help to ensure that potential defects are found and can be corrected before they can cause problems.

Safety Zones

3. Installations should not be constructed, and silage must not be made, and *silage,* effluent and *slurry* must not be stored, within **10 metres** of any inland freshwaters or coastal waters which any leakage could enter (This includes rivers, lakes, reservoirs and smaller *watercourse*s such as streams and ditches as well as perforated drainage pipes). These are **minimum** distances and should be increased in sensitive locations, such as near water supply intakes, which NRW can advise you on.

4. Different methods of making *silage* have slightly differing requirements as regards safety zones. (See **Annex 5**)

5. Impermeable drains and sealed pipes (including sealed pipes transporting *slurry*) are permitted within 10 metres of inland or coastal waters. Although the use of perforated drainage pipes within 10 metres of any *slurry* store or *reception pit* (to move exceptionally high groundwater away) is against the Regulations, this **may** be allowed on a case by case basis, subject to NRW's permission being granted.

6. *The Code of Good Agricultural Practice For the Protection of Water, Soil*

and Air for Wales (CoGAP)", issued by the Welsh Government gives further guidance on buildings and structures on farms that could cause pollution of water, air or soil from substances not controlled by these Regulations. It also contains advice on the handling and management of both solids and liquids in and around the farmyard to avoid pollution, and how to deal with effluents that arise. The Construction Industry Research and Information Association (CIRIA) Report C759 "*Livestock manure and silage storage infrastructure for agriculture*" gives technical guidance on how these requirements may be met for different polluting substances.

How do these regulations apply to existing stores, and what are 'Exempt Structures'?

7. The Regulations apply to all installations used, constructed, substantially reconstructed, or substantially enlarged after September 1991.

   Installations that were in use or built before March 1991 or where a contract for construction was entered into before March and completed before September 1991 are "exempt structures" and can normally be used subject to two limitations:

   - NRW can require "exempt" structures to be improved to bring them up to the standards within the Regulations by issuing a Notice under regulation 30 detailing the required improvements and the time period for compliance

   - When a previously "exempt", (or any other installation), has been (or is being), substantially enlarged or reconstructed, the Regulations will apply to that structure, and will apply to the **whole** installation and not just the newly extended or reconstructed part. For example, a major refit of an "exempt" store would bring the store and its associated drains and tanks inside the scope of the Regulations, but repairs or minor changes to a *reception pit* or channels would not necessarily cause a *slurry storage tank* to lose its exemption, "Substantially reconstructed" will often mean requiring significant structural alterations.

   NB This exemption only applies to the construction requirements of a pre 1991 store. An old store may be used but the storage <u>capacity</u> requirements of these Regulations must still be met.

8. Before starting work to enlarge or reconstruct a structure, you are strongly advised to discuss your plans with NRW. Remember that you have to notify NRW <u>before</u> beginning construction of a new, substantially altered or reconstructed installation.

What will happen if NRW believes that there is a risk of pollution?

9. NRW has powers to serve a notice on you requiring you to take action to improve existing installations where NRW considers that there is a significant risk of pollution to 'controlled waters'. (This can include field *silage* sites and otherwise "exempt" installations). The actions required by the Notice must be appropriate to the task of minimising the risk of pollution (For example, to require sufficient *slurry* storage to be provided.).

10. You will have a minimum of 28 days to comply with the Notice. NRW may extend this minimum period to take into account, for example, of the time needed to obtain planning permission, or to arrange for contractors to do the work, weather or site conditions.

Can I appeal against a Notice served by NRW?

11. A farmer may appeal to Welsh Ministers against a Notice served by NRW. If a farmer wishes to appeal against a Notice served on her/him by NRW it must be done in writing within 28 days from the day after the date on which the Notice was served. You and NRW have the right to request an oral hearing by the person appointed to decide your appeal. Appeals in Wales should be addressed to:

Agriculture, Sustainable Development Division
Welsh Government
Rhodfa Padarn
Llanbadarn Fawr
Aberystwyth
Ceredigion
SY23 3UR

and copied to the Natural Resources Wales at the address given with the Notice. If an appeal is successful the Notice may be withdrawn or modified or the period for compliance be extended. If, following the appeal, the Notice is not withdrawn and the period for compliance is not extended, the period for compliance is deemed to expire on the day of the determination of the appeal, unless the Welsh Ministers decide to extend the period for compliance. The Welsh Ministers could bear in mind, when deciding whether to extend the period for compliance, whether it will be reasonable, feasible, or practicable for the appellant to comply with the determination as soon as it has been issued.

ANNEX 5

Specific Requirements for *Silage* Making and Storage of *Silage* Affected by the Regulations

1. *Silos* must be built in accordance with the construction standards set out in **Schedule 5** of the Regulations which are set out in full at **Annex 6 of this Guidance**

2. *Silage* Safety Zones are as follows:
   - ***Silage* in *silos***
     must not be made or stored within 10 metres of any inland or coastal waters which effluent could enter,
   - **Baled *silage***
     must be sealed in an impermeable membrane or bagged and not be made, stored, opened or unwrapped within 10 metres of any inland or coastal waters which effluent could enter.
   - **Field *Silage* (*silage* stored on open land)**
     must, in addition to the ten metre restriction for baled *silage*, not be made or stored within 50 metres of a 'protected water supply source'.

3. 'Protected water supply sources' are defined in **Part 6** of the Regulations as places where 'water is abstracted for human consumption, or for use in farm dairies, or in the preparation of human food'. If you are in doubt as to whether a nearby water supply is protected by the Regulations, you should contact NRW for advice.

4. Where field *silage* is being made, NRW must be given notice of the place where *silage* is to be stored at least 14 days before that site is first used. If, once *silage* making has begun, a further relevant abstraction point is identified, there is usually no need to stop or alter *silage* making on that site for that season, even though this is technically in breach of the Regulations. However, for the next season the siting of any field *silage* should take into account the newly identified abstraction point.

5. *Silage* that is removed from where it was initially ensiled should be stored in the long term in accordance with the Regulations for structures, "Exempt" structures, or field stores.

6. The Regulations do not apply to *silage* whilst it is being stored temporarily in a container for transporting. "Temporarily" is not defined in the Regulations, but should be read to mean that any transportation of *silage* should be done without undue delay. *Silage* which has been removed from a *silo* in small amounts for regular feeding of animals is not subject to the storage requirements, and may in any case be kept in the open in unbaled form. This

provision will **not** act as a defence for any pollution occurring as a result of unprotected *silage* being left exposed.

7. You do not need to store baled *silage* (wrapped or bagged) on a specially constructed base, but you **must** ensure that if it is stored directly on the ground it does not leak effluent into water, as this could be an offence under the Regulations

8. Care must be taken to collect and store any *silage effluent* without causing pollution, as this could be an offence under the Regulations. *Silage effluent* can be used for feeding to *livestock* or, following dilution, may be spread onto agricultural land as a fertiliser.

9. *Silage* making in field heaps or non-baled bags is allowed, without the need for an impermeable base, provided the site is suitable.

***Silage* Stores: See Schedule 5 at Annex 7**

10. Where *silage* is stored in *silos*, the *silos* must have an impermeable base extending beyond any walls, and impermeable perimeter drains flowing into an effluent tank of adequate capacity. Any associated channels / drains, pipes and tanks must also be impermeable. The base and associated channels / drains, pipes and tanks must be resistant to corrosion by *silage* and *silage effluent*.

11. As well as bases designed in accordance with the code of practice for design of concrete structures for retaining aqueous liquids, the Regulations now allow for bases to be constructed using hot-rolled asphalt, providing this use is in accordance with the code of practice for selection and use of construction materials.

12. Walls for *silos* are optional, but where there are walls, they must be placed **inside the perimeter drains** of the base. Any walls must be capable of withstanding wall loadings as laid down by BS 5502 part 22 2003, not loaded beyond the design specification, and notices displayed on the walls, indicating these loadings.

13. It is likely farmers will need to seek professional advice in order to ensure that the required standards are met. These installations will need to meet the durability life requirement of 20 years with maintenance.

14. Effluent collection systems to catch any liquor produced are required. The minimum capacity of effluent tanks must correspond to the *silo* capacity as shown in Table 1 below. In the majority of cases these capacities should provide at least two days storage at peak flow. However, even if the effluent tank provides storage as indicated below, there would still be an offence committed if pollution occurs.

Table 1: Minimum capacity of *silage effluent* tanks in relation to *silo* capacity

Silo Capacity	***Minimum Effluent Tank Capacity***
Less than 1500^3	20 litres for every $1m^3$ *silo* capacity
1500^3 or more	30,000 litres plus 6.7 litres for every $1m^3$ *silo* capacity in excess of 1500^3
500m3	10,000 litres
1000m3	20,000 litres
1500m3	30,000 litres
2000m3	33350 litres- i.e. 30,000 +3350
2500m3	36700 litres- i.e. 30,000 + 6700
3000m3	40050 litres- i.e. 30,000 +10050
4000m3	46750 litres- i.e. 30,000 +16750

15. In the majority of cases these capacities should provide at least two days storage at peak flow. However, if the effluent tank provides inadequate storage and pollution occurs, this would still be an offence. Effluent tank capacities are unlikely to be sufficient for two days storage for unwilted *silage* or *silage* made in an unroofed *silo*. You should check and empty your tanks as often as is necessary. The *silage effluent* will also be subject to the Regulations on storage and *spreading* of *organic manure*s that have high available Nitrogen.

16. If any part of the effluent tank is below ground level, it must be impermeable and resistant to attack by *silage effluent* for 20 years **without maintenance.** The tank can either be prefabricated in one piece or constructed on site. You should discuss your proposals with NRW at the planning stage, as NRW will require written confirmation that the requirements of the Schedule have been met. NRW can provide a form to help you provide this confirmation (see **Annex 8** for contact details).

17. In some instances you may wish to store *silage effluent* and *slurry* in the same tank. **Mixing or re-circulating *slurry* can give off dangerous gases that are lethal to both humans and *livestock*. Never put *silage effluent* into under-floor *slurry* stores, as similar problems can occur.** If this method of storage is used then the storage container must be designed to withstand

both types of neat effluent and, of course, have sufficient capacity to satisfy the requirements of both **Schedules 5 and 6 at Annex 7**

Field Silage

18. ‘Field *silage*’ means field heaps made on open ground, where there is no form of excavation, nor floors nor walls on the site. Sites may be subject to minor levelling by filling in small depressions. Note that the topsoil **must not** be excavated at all. This is very important as undisturbed soil is needed to help retain any *silage effluent* that may be produced and reduce the pollution risk. If there are excavations, walls or floors then the full requirements of **Schedule 5** must be applied. The making and storage of non-baled *silage* in ‘bulk bags’ is field *silage*. Making and storing field *silage* in field heaps or in bulk bags (non-baled) without an impermeable base or walls is allowed, provided the site is suitable.

19. You should choose a level site and make a careful assessment of the potential polluting risk to controlled waters. Proposals should be discussed with NRW well in advance of *silage* making and, in any event, NRW must be notified of the proposed site at least 14 days before it is first used. NRW can provide a standard form for you to use in making this notification (see **Annex 8** for contact details).

20. In considering site suitability, NRW will take into account slope, soil permeability, soil compaction, degree of soil cracking and fissuring, and the risk of causing pollution of groundwater and surface water. Other factors include the proximity of roads and farm tracks (which may increase the risk of run-off reaching surface waters) or the existence of protected areas such as ‘protected water supply sources’, or Sites of Special Scientific Interest (SSSIs).

21. Field *silage* sites have to meet the requirements of the Regulations. You must:

- Notify NRW of the proposed site at least 14 days before that site is first used. Provided the site is acceptable to NRW, no further notifications are required unless there is an expansion of that site or new sites need to be considered.
- Locate the site in accordance with paragraph 20 above.
- Locate the site at least 50 metres away from water sources. Water sources may be located on neighbouring property and you should investigate thoroughly such a possibility if your proposed site is within 50 metres of the boundary of neighbouring property.

22. If you make field *silage* on a site without having notified NRW, or on a site disallowed by NRW, you will contravene the Regulations, and will be liable to prosecution.

ANNEX 6

Specific Requirements for *Slurry* Storage systems covered by the Regulations

1. The Regulations apply to all types of *slurry* storage systems, including those constructed of earth, but not to tankers used for transporting *slurry* on roads or about a farm, and are used to temporarily store *slurry*. *Slurry* stores including earth banked compounds which are newly constructed, substantially enlarged or substantially reconstructed after September 1991 must be built in accordance with the construction standards set out in **Schedule 6 at Annex 7**. Earth-banked compounds should be regarded as *slurry storage tank*s for the purposes of the current British Standard (BS 5502: part 50 1993).

2. Existing *slurry* stores constructed before September 1991 can still be used without alteration as long as they qualify as an "exempt structure" (see **Part 6** of the **Regulation**), unless NRW specify further works to be undertaken.

3. For the purpose of these Regulations, run-off from solid manure stores, woodchip or straw bedded corrals or stand-off pads[14] counts as *slurry*. It must be collected and stored either independently, or in the main *slurry* storage system. Many corrals have no built-in provision to store drainage. As corrals have considerable potential to pollute controlled waters, NRW will normally require that the corral is modified to ensure that the drainage is collected and contained within the *slurry* system.

Construction standards for slurry stores and reception pits: Schedule 6

4. There are general requirements for the walls and bases of all *slurry* tanks, associated tanks, *reception pits*, pipes and channels to be impermeable. All *slurry* tanks, associated tanks, *reception pits*, pipes and channels must also meet standards for protection against corrosion as set out in the current British Standard (BS 5502: part 50 1993). The base and walls of the *slurry*

[14] **Woodchip corrals** are usually permanent, unroofed drained systems, bedded with woodchip and used to accommodate *livestock*. They have no impermeable lining, so have the potential to pollute groundwater and are unacceptable at most sites. **Stand-off pads** are similar to corrals, but either overlay impermeable sub-soil, or have a suitable lining, with pipes delivering the drainage, which is slurry, into a slurry system.

NRW will normally require a corral overlaying free-draining soil and with no impermeable liner to be modified and ensure any drainage is collected and contained within a slurry system.

There are variations of these systems, including straw-based systems, lined or un-lined, which may be permissible on a case-by case basis. Before construction commences, advice should be sought from NRW.

tank and any associated *reception pit* must be capable of withstanding the loadings specified in BS 5502: part 50 1993. The need to comply with the design requirements in **Schedule 6** of the **Regulations** means that professional advice will almost certainly be needed for the design and construction of all *slurry* installations including earth-banked compounds. Earthbank stores will need substantial additional work if the in-situ material of the base is found to be permeable. Soil with a clay content of 20-30% is generally ideal for embankments that are stable and resistant to cracking. A higher clay content may be used for the base. In either case, the suitability of the material should be confirmed by analysis in a soils laboratory and preferably verified by a civil engineer. Impermeable soil must be present to a depth of at least one metre below the bottom of the store. Where the material is not suitable, then suitable material can be imported, or an impermeable synthetic liner should be used.

5. In addition, for weeping-wall stores the base must extend beyond its walls and must include perimeter drains to catch any escaped *slurry*. This effluent must then drain into an effluent tank that complies with these Regulations. Contingency measures may be built into the store. These could include raising the outer sides of the perimeter drains to collect any 'spurts of *slurry*', but farmers are advised to speak to NRW staff on a case by case basis, before designs are confirmed.

6. Any outlet drainage pipes on *slurry storage tank*, effluent tank or *reception pit* must have two valves in series, each capable of shutting off the flow of *slurry* and each being kept locked shut when not in use. This does not apply in relation to a *slurry storage tank* that drains through a pipe into another *slurry storage tank* if the other tank is of equal or greater capacity, or if the tops of the tanks are at the same level. The design and positioning of the valves must take into account the possibility that one piece of debris could obstruct both valves if they are positioned too closely together, so the valves must be separated from each other by a minimum distance of one metre. Each valve should be designed so that sufficient force can be exerted to break through accumulations of bedding material that may regularly pass through the system.

7. Locating stores in areas affected by a high water table may be unavoidable, but might cause the installations to float unless additional measures are undertaken. To reduce the risk of flotation without using excessive amounts of concrete, it may be permissible to install groundwater pressure relief drains. Since these are likely to be sited within 10 metres of the installation and they will be considered to be a '*watercourse*', NRW agreement is required to make it legal. You will be asked for confirmation that there is a high water table, and for the scheme to incorporate inspection points.

Sizing of *slurry* stores and *reception pits*

8. At premises where *slurry* is spread on the land, you must take into account the '*storage period*' requirements of the Regulations and accounting for rates and times of utilisation of *slurry*, the capacity of other *slurry storage tank*s, the

quantities of rainfall likely to contribute to the contents during that period (see paragraph 15 below) and the need to provide at least 750mm or 300mm of freeboard (see paragraph 13-14 below).

9. Farms in some areas, particularly those with above average rainfall and heavy land, will require considerably more *slurry* storage capacity. For example, where access to suitable land for land *spreading* is restricted, farmers are advised to provide adequate capacity to avoid the risk of causing water pollution and of subsequent prosecution.

10. Local NRW area offices will provide general guidance on storage capacity. However, you may find it useful to take additional professional advice on storage requirements from an agricultural consultant.

11. Farmers who consider they have sufficient lower risk land to enable them to operate satisfactorily with less storage must consult NRW to discuss their plans. They will need to demonstrate to NRW that the system poses a minimal risk to the environment.

12. When calculating the minimum size of any *slurry* installation, you must include provision for the ***likely*** quantities of rainwater falling directly into the store and onto areas which drain into the store (NB: The definition of "*slurry*" includes rainwater and yard washings mixed with excreta)

13. For earth-banked stores, when calculating capacity you must also allow for an additional capacity to provide a minimum freeboard of 750mm. This freeboard must not be compromised because of the risk of the structure being weakened. Check the level of *slurry* regularly and make arrangements for safe land *spreading* or export of *slurry* to maintain the freeboard. Particular care must be taken to ensure that lagoons or stores do not overflow. Overflowing could lead to prosecution for pollution.

14. A minimum freeboard of 300mm is required when calculating the capacity for stores constructed of materials other than earth. For these stores, the freeboard should only be compromised in **exceptional circumstances** and excess *slurry* should be removed at the earliest opportunity.

15. For calculating the size of any facilities used for the temporary storage of *slurry* (such as *reception pits* and associated channels) the system should be of sufficient size to store a minimum of two days' combined *slurry* production (including all urine, *parlour washings* etc) **and likely rainfall**.

    In the case of using channels to store such *slurry*:

    - Where the flow of *slurry* into the *reception pit* is from a channel controlled by a sluice, the *reception pit* must be sufficiently large to contain the maximum amount of *slurry* that could be released by opening any sluice. Channels leading to the sluice must be adequate to store two days' production of *slurry*.
    - Where there is no sluice and the tops of the channels are the same height as the top of any *reception pit*, the capacity of the collection

channels plus the *reception pit* must together be sufficient for at least 2 days' production of *slurry*.

- Where there is no sluice, and the channels are higher than the *reception pit*, the capacity of the *reception pit* alone must be sufficient for at least 2 days' production of *slurry*.
- Where there are no channels leading to the *reception pit*, the *reception pit* must have the capacity to contain at least 2 days' production of *slurry*.
- Where channels discharge directly into a *slurry storage tank* the channels need not comply with the minimum storage capacity requirement.

Notice Requiring Works

16. The notice must:

- specify or describe the works, precautions or other steps that the person is required to carry out or take;
- state the period within which any such requirement is to be complied with; and
- inform the person of the right to appeal.

17. The period for compliance with the notice will be 28 days, or longer if reasonable in the circumstances.

18. Natural Resources Wales may at any time (including a time after the period for compliance has ended) withdraw the notice, extend the period for compliance with any requirement of the notice or with the consent of the person on whom the notice is served, modify the requirements of the notice.

Appeals against notices

19. A person served with a notice may, within the period of 28 days beginning on the day after the date on which the notice is served (or such longer period as the Welsh Ministers allow), appeal to the Welsh Ministers against the notice.

20. An appeal must be made by the appellant serving notice on the Welsh Ministers. The notice must contain or be accompanied by a statement of the grounds of appeal.

21. Before determining an appeal under this regulation, the Welsh Ministers must, if requested to do so by the appellant or Natural Resources Wales, afford them an opportunity of appearing before and being heard by a person appointed by the Welsh Ministers for the purpose.

22. On determining an appeal, the Welsh Ministers may direct Natural Resources Wales to withdraw the notice; modify any of its requirements; extend the period for compliance with any requirement; or dismiss the appeal.

23. The period for compliance with a notice against which an appeal has been made can be extended so that it expires on the date on which the Welsh Ministers finally determine the appeal.

ANNEX 7

Schedules from the Regulations

SCHEDULE 1

Regulations 3, 4, 29, 34 and 36

Amount of manure, nitrogen and phosphate produced by grazing *livestock* and *non-grazing livestock*

Table 1

Grazing *livestock*

Category	*Daily manure produced by each animal (litres)*	*Daily nitrogen produced by each animal (grams)*	*Daily phosphate produced by each animal (grams)*
Cattle			
Calves (all categories except veal) up to 3 months:	7	23	12.7
Dairy cows—			
from 3 months and less than 13 months:	20	95	34
from 13 months up to first calf:	40	167	34
After first calf and—			
annual milk yield more than 9000 litres:	64	315	142
annual milk yield between 6000 and 9000 litres:	53	276	121
annual milk yield less than 6000 litres:	42	211	93
Beef cows or steers[(a)]—			
from 3 months and less than 13 months:	20	91	33
from 13 months and less than 25 months:	26	137	43
From 25 months—			
females or steers for slaughter:	31	137	60
females for breeding—			
weighing 500 kg or less:	32	167	65
weighing more than 500 kg:	45	227	86
Bulls			

Non-breeding, 3 months and over:	26	148	24
Breeding—			
from 3 months and less than 25 months:	26	137	43
from 25 months:	26	132	60
Sheep			
From 6 months up to 9 months old:	1.8	5.5	0.76
From 9 months old to first lambing, first tupping or slaughter:	1.8	3.9	2.1
After lambing or tupping[(b)]—			
weight less than 60 kg:	3.3	21	8.8
weight from 60 kg:	5	3	10.0
Goats, deer and horses			
Goats:	3.5	41	18.8
Deer—			
breeding:	5	42	17.6
other:	3.5	33	11.7
Horses:	24	58	56

[(a)] Castrated male.

[(b)] In the case of a ewe, this figure includes one or more suckled lambs until the lambs are aged six months.

Table 2

Non-grazing livestock

Category	*Daily manure produced by each animal (litres)*	*Daily nitrogen produced by each animal (grams)*	*Daily phosphate produced by each animal (grams)*
Cattle			
Veal calves:	7	23	12.7
Poultry[(a)]			
Chickens used for production of eggs for human consumption—			
less than 17 weeks:	0.04	0.64	0.47
from 17 weeks (caged):	0.12	1.13	1.0
from 17 weeks (not caged)	0.12	1.5	1.1
Chickens raised for meat:	0.06	1.06	0.72
Chickens raised for breeding—			
less than 25 weeks:	0.04	0.86	0.78
from 25 weeks:	0.12	2.02	1.5
Turkeys—			

male:	0.16	3.74	3.1
female:	0.12	2.83	2.3
Ducks:	0.10	2.48	2.4
Ostriches:	1.6	3.83	18.5
Pigs			
Weight from 7 kg and less than 13 kg:	1.3	4.1	1.3
Weight from 13 kg and less than 31 kg:	2	14.2	6.0
Weight from 31 kg and less than 66 kg—			
dry fed:	3.7	24	12.1
liquid fed:	7.1	24	12.1
Weight from 66 kg and—			
Intended for slaughter—			
dry fed:	5.1	33	17.9
liquid fed:	10	33	17.9
sows intended for breeding that have not yet had their first litter:	5.6	38	20
sows (including their litters up to a weight of 7 kg per piglet) fed on a diet supplemented with synthetic amino acids:	10.9	44	37
sows (including their litters up to a weight of 7 kg per piglet) fed on a diet without synthetic amino acids:	10.9	49	37
breeding boars from 66 kg up to 150 kg:	5.1	33	17.9
breeding boars, from 150 kg	8.7	48	28

[(a)] Note: all figures for *poultry* include litter.

SCHEDULE 2 Regulation 5

Fruit species

Botanical Name	*Common Name*
Cydonia oblonga	Quince
Malus domestica	Apple
Mespilus germanica	Medlar
Morus spp.	Mulberry
Prunus armenaica	Apricot
Prunus avium	Sweet cherry
Prunus cerasus	Sour (cooking) cherry
Prunus ceracifera	Cherry plum
Prunus domestica	Plum
Prunus domestica subsp. insititia	Damson, Bullace
Prunus persica	Peach
Prunus persica var. nectarina	Nectarine
Prunus x gondouinii	Duke cherry
Prunus spinosa	Sloe
Pyrus communis	Pear
Pyrus pyrifolia	Asian pear

SCHEDULE 3

Regulations 9, 36 and 37

Calculating nitrogen in *organic manure*

PART 1

Standard Table

Total amount of nitrogen in *livestock* manure

Manure other than slurry	*Total nitrogen in each tonne (kg)*
Manure other than *slurry* from—	
cattle:	6
pigs:	7
sheep:	7
ducks:	6.5
horses:	7
goats:	6
Manure from laying hens:	19
Manure from turkeys or broiler chickens:	10

Slurry	*Total nitrogen in each cubic metre (kg)*
cattle:	2.6
pigs:	3.6
Separated cattle *slurry* (liquid fraction)—	
strainer box:	1.5
weeping wall:	2
mechanical separator:	3
Separated cattle *slurry* (solid fraction):	4
Separated pig *slurry* (liquid fraction):	3.6
Separated pig *slurry* (solid fraction):	5
Dirty water:	0.5

PART 2

Sampling and analysis of *organic manure*

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

1.—(1) In relation to *slurry* and other liquid and semi-liquid *organic manure*, at least five samples, each of 2 litres, must be taken.

Subject to sub-paragraph (3), 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.

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*.

Whether taken as described in sub-paragraph (2) or (3), the five samples 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.

The 2 litre sample produced in accordance with sub-paragraph (4) must then be sent for analysis.

Solid manures

—(2) In relation to solid manures, the samples must be taken from a manure heap.

At least ten samples of 1 kg each must be taken, each from a different location in a heap.

Each sub-sample must be taken at least 0.5 metres from the surface of the heap.

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.

The sub-samples must be placed on a clean, dry tray or sheet.

Any lumps must be broken up and the sub-samples must be thoroughly mixed together.

A representative sample of at least 2 kg must then be sent for analysis.

SCHEDULE 4

Regulations 20 and 22

Permitted crops for the closed period

Crop	*Maximum nitrogen rate (kg/hectare)*
Oilseed rape, winter[a]	30
Asparagus	50
Brassica[b]	100
Grass[a][c]	80
Over-wintered salad onions	40
Parsley	40
Bulb onion	40

[a] Nitrogen must not be spread on crops after 31 October.

[b] An additional 50 kg of nitrogen per hectare may be spread every four weeks during the closed period up to the end of harvest.

[c] A maximum of 40 kg of nitrogen per hectare may be spread at any one time.

SCHEDULE 5 Regulation 24

Requirements for silos

1. The requirement to be satisfied in relation to a silo is that it complies with the following provisions of this Schedule.

The base of the silo must—

(a) extend beyond any walls of the silo,

(b) be provided at its perimeter with channels designed and constructed so as to collect any silage effluent that escapes from the silo, and

(c) have adequate provision for the drainage of that effluent from those channels to an effluent tank through a channel or pipe.

The capacity of the effluent tank must not be less than—

(d) in the case of a silo with a capacity of less than 1,500 cubic metres, 20 litres for each cubic metre of silo capacity, and

(e) in the case of a silo with a capacity of 1,500 cubic metres or more, 30 cubic metres plus 6.7 litres for each cubic metre of silo capacity in excess of 1,500 cubic metres.

—(2) The base of the silo must be—

designed in accordance with the code of practice for design of concrete structures for retaining aqueous liquids published by the British Standards Institution and numbered BS 8007: 1987(**15**), or

constructed using appropriate hot-rolled asphalt in accordance with the code of practice for selection and use of construction materials published by the British Standards Institution and numbered BS 5502: Part 21: 1990(**16**).

The base of the silo, the base and walls of its effluent tank and channels and walls of any pipes must be impermeable.

The base and walls of the silo, its effluent tank and channels and the walls of any pipes must, so far as reasonably practicable, be resistant to attack by silage effluent.

No part of the silo, its effluent tank or channels or any pipes may be situated within 10 metres of any inland freshwaters or coastal waters into which silage effluent could enter if it were to escape.

If the silo has retaining walls—

the retaining walls must be capable of withstanding minimum wall loadings calculated on the assumptions and in the manner indicated by paragraph 15.6 of the code of practice on buildings and structures for agriculture published by the British Standards Institution and numbered BS 5502: Part 22: 2003(**17**),

the silo must at no time be loaded to a depth exceeding the maximum depth consistent with the design assumption made in respect of the loadings of the retaining walls, and

notices must be displayed on the retaining walls in accordance with paragraph 18 of that code of practice.

Subject to paragraph 9, the silo, its effluent tank and channels and any pipes must be designed and constructed so that with proper maintenance they are likely to continue to satisfy the requirements of paragraphs 2 to 5 and, if applicable, paragraph 7(a) for at least 20 years.

([15]) Publication date: 30 October 1987. ISBN 0-580-16134-X.

([16]) Publication date: 31 December 1990. ISBN 0-580-18348-3.

([17]) Publication date: 10 June 2003. ISBN 0-580-38654-6.

If any part of an effluent tank is below ground level, the tank must be designed and constructed so that it is likely to continue to satisfy the requirements of paragraphs 4 and 5 for at least 20 years without maintenance.

SCHEDULE 6 Regulation 25

Requirements for *slurry* storage systems

1. The requirements to be satisfied in relation to a *slurry* storage system are as follows.

2. The base of the *slurry* storage tank, the base and walls of any effluent tank, channels and reception pit, and the walls of any pipes, must be impermeable.

3. The base and walls of the *slurry* storage tank, any effluent tank, channels and reception pit, and the walls of any pipes, must be protected against corrosion in accordance with paragraph 7 of the code of practice on buildings and structures for agriculture published by the British Standards Institution and numbered BS 5502: Part 50: 1993(**18**).

4. The base and walls of the *slurry* storage tank and of any reception pit must be capable of withstanding characteristic loads calculated on the assumptions and in the manner indicated by paragraph 5 of the code of practice on buildings and structures for agriculture published by the British Standards Institution and numbered BS 5502: Part 50: 1993.

Any facilities used for the temporary storage of *slurry* before it is transferred to a *slurry* storage tank must have adequate capacity to store—

the maximum quantity of *slurry* that (disregarding any *slurry* which will be transferred directly into a *slurry* storage tank) is likely to be produced on the premises in any two day period, or

a lesser capacity that NRBW agrees in writing is adequate to avoid any significant risk of pollution of controlled waters.

Where *slurry* flows into a channel before discharging into a reception pit and the flow of *slurry* out of the channel is controlled by means of a sluice, the capacity of the reception pit must be adequate to hold the maximum quantity of *slurry* that can be released by opening the sluice.

In the case of a *slurry* storage tanks with walls made of earth, the tank must have at least 750 mm of freeboard and 300 mm of freeboard in all other cases.

5. No part of the *slurry* storage tank or any effluent tank, channels or reception pit may be situated within 10 metres of any inland freshwaters or coastal waters into which *slurry* could enter if it were to escape unless precautions are taken that NRBW agrees in writing are adequate to avoid any significant risk of pollution of controlled waters.

6. The *slurry* storage tank and any effluent tank, channels, pipes and reception pit must be designed and constructed so that with proper maintenance they are likely to continue to satisfy the requirements of paragraphs 2 to 4 for at least 20 years.

7. If the walls of the *slurry* storage tank are not impermeable, the base of the tank must—

(a) extend beyond the walls;

(b) be provided with channels designed and constructed so as to collect any *slurry* that escapes from the tank;

(c) have adequate provision for the drainage of the *slurry* from those channels to an effluent tank through a channel or pipe.

—(2) Subject to sub-paragraph (3), if the *slurry* storage tank or any effluent tank or reception pit is fitted with a drainage pipe there must be two valves in series on the pipe with each valve separated from the other by a minimum distance of 1 metre.

Each valve must be capable of shutting off the flow of *slurry* through the pipe and must be kept shut and locked in that position when not in use.

([18]) Publication date: 15th April 1993. ISBN 0-580-22053-2.

Sub-paragraph (1) does not apply in relation to a *slurry* storage tank that drains through the pipe into another *slurry* storage tank if the other tank is of equal or greater capacity or if the tops of the tanks are at the same level.

ANNEX 8

Further Information and Contact Details

Welsh Government

Customer Contact Centre:
Your first point of contact for all telephone enquiries and email correspondence should be the Customer Contact Centre where staff are on hand to provide information and answer queries. The Customer contact Centre is open between 08:30 and 17:00

The contact details for the Customer Contact Centre are as follows:
Tel: 0300 062 5004
Email: rpwonline@gov.wales
PO Box address:
PO Box 1091, Cardiff, CF11 1SU

Welsh Government Website:
For the latest information on the Regulations and to access Guidance and supporting documents, visit the Welsh Government's website at
https://gov.wales/land-management

Natural Resources Wales (NRW):
You can contact NRW on:
Email: enquiries@naturalresourceswales.gov.uk
Tel: 0300 065 3000
or by post:
Natural Resources Wales,
c/o Customer Care Centre, Ty Cambria,
29 Newport Rd, Cardiff, CF24 0TP

Control of Agricultural Pollution Regulations Helpline (ADAS) – 01974 847000

PLANET software - a free copy is available by visiting www.planet4farmers.co.uk or phoning 08453 451302

ENCASH software - for determining nitrogen produced by permanently housed pigs and poultry - a free copy is available by visiting www.planet4farmers.co.uk or phoning 08456023864

MANNER *NPK* software - a free copy is available by visiting www.planet4farmers.co.uk or phoning 08456023864

The Nutrient Management Guide (RB 209) https://ahdb.org.uk/RB209. A copy can be obtained from AHDB (the Agricultural and Horticultural Development Board.

Code of Good Agricultural Practice for the Protection of Water, Soil and Air for Wales 2011 (Welsh Government) - available from https://gov.wales/code-good-agricultural-practice

Welsh Government Guidance on Reducing Ammonia Emissions can be accessed at https://gov.wales/sites/default/files/publications/2019-04/code-of-good-agricultural-practice-guidance-on-reducing-ammonia-emissions.pdf

Guidance on Construction, Repair and Maintenance leaflets:

- Above-ground circular concrete and weeping-wall *slurry* stores (CGN 001)
- Earth-banked *slurry* stores (CGN 002)
- In-situ concrete *slurry* stores (CGN 003)
- Above-ground circular steel *slurry* stores (CGN 004)
- Separation of clean and dirty water; dirty water storage; and yard area construction (CGN 008)
- Sluice valves on steel and concrete above-ground *slurry* stores (CGN 010)
- The use of covers on circular steel and concrete *slurry* stores (CGN 011)

A Farmer's Guide to the Planning System (Welsh Government, August 2003) can be accessed at http://adlib.everysite.co.uk/adlib/defra/content.aspx?doc=102371&id=102373