

FARMING & WATER SCOTLAND



Slurry and manure storage

Slurry and manures are a valuable source of nutrients on the farm but need to be handled and managed carefully to ensure no pollution occurs.

Farms which produce slurry **must** have adequate facilities and management in place to collect, store and manage the slurry. Dairy farms **must** ensure that dairy washings and parlour drainage are collected and contained within the farm slurry storage system.

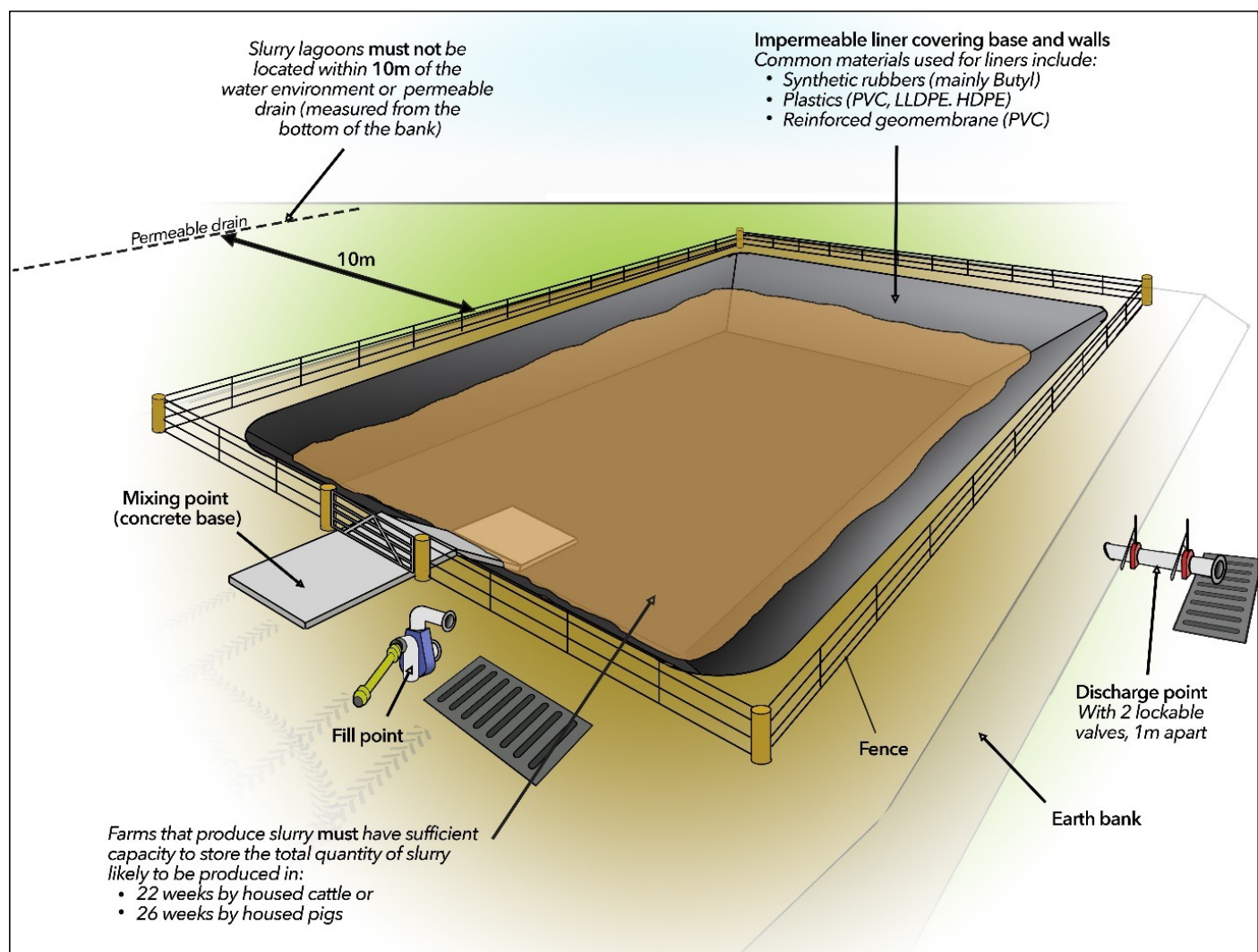


Figure 1.1 Slurry storage lagoon

Slurry storage capacity

Farms which produce slurry **must** have sufficient capacity to store the total quantity of slurry likely to be produced in:

- 22 weeks by housed cattle or
- 26 weeks by housed pigs.

This calculation **must** also include any rainfall entering the system, including from middens, dirty yards or silage pits, any dairy or parlour washings and any imports or exports of slurry during the 22-or 26-week housing period (Table 1.1).

All farms located outside the NVZ areas must comply with the minimum storage capacity requirement by 1 January 2026.

Certain types of slurry which consist mainly of rainwater and washings can be conveyed to a constructed farm wetland (CFW) for treatment.

The Constructed Farm Wetland Know the Rules Factsheet 5 gives details of types of run-off which may be conveyed to a CFW.

*Table 1.1 – How to calculate your storage capacity requirements
(22 weeks housed cattle/26 weeks pigs)*

<div>Minimum storage capacity</div> <div>=</div> <div>Slurry produced directly from housed livestock</div> <div>+</div> <div>Rainfall entering system</div> <div>+</div> <div>Run-off from dirty yards, middens, silage pits etc</div> <div>+</div> <div>Washings from livestock yards or buildings</div> <div>+</div> <div>Any imports of slurry</div> <div>-</div> <div>Any exports of slurry</div>	<div>Use standard figures for slurry production per animal (see NVZ guidance Section 5 Manure Planning Part 2: Livestock Manure Storage)</div> <div>Scottish Rainfall Data – select closest location on map and use monthly mean data from line graph.</div>
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Slurry storage systems

All structures and slurry storage systems used to store slurry **must**:

- be maintained to ensure they are kept free from any structural defects.
- be fit for purpose and meet a minimum level of structural integrity such that;
 - the base and walls of any channel, reception pit, the walls of any pipe and the base of any tank are impermeable
 - the walls of any tank are impermeable unless the base of the tank extends beyond its walls and has channels to collect and transfer any escaped slurry to a slurry storage system
 - where slurry flows into a channel before discharging into a reception pit and is controlled by a sluice or valve, the reception pit has adequate capacity to contain the maximum slurry that can be released by opening the sluice or valve
 - the capacity of any facility used to temporarily store slurry before transferring to the slurry tank the equivalent of at least 1.5% of the minimum farm storage capacity
 - where the slurry storage tank is fitted with a drainage pipe, there are 2 valves fitted in series that are to be kept locked shut when not in use
 - earth bank lined lagoons maintain a minimum freeboard of 750mm and all other slurry tanks maintain a minimum freeboard of 300mm (Figure 1.2).

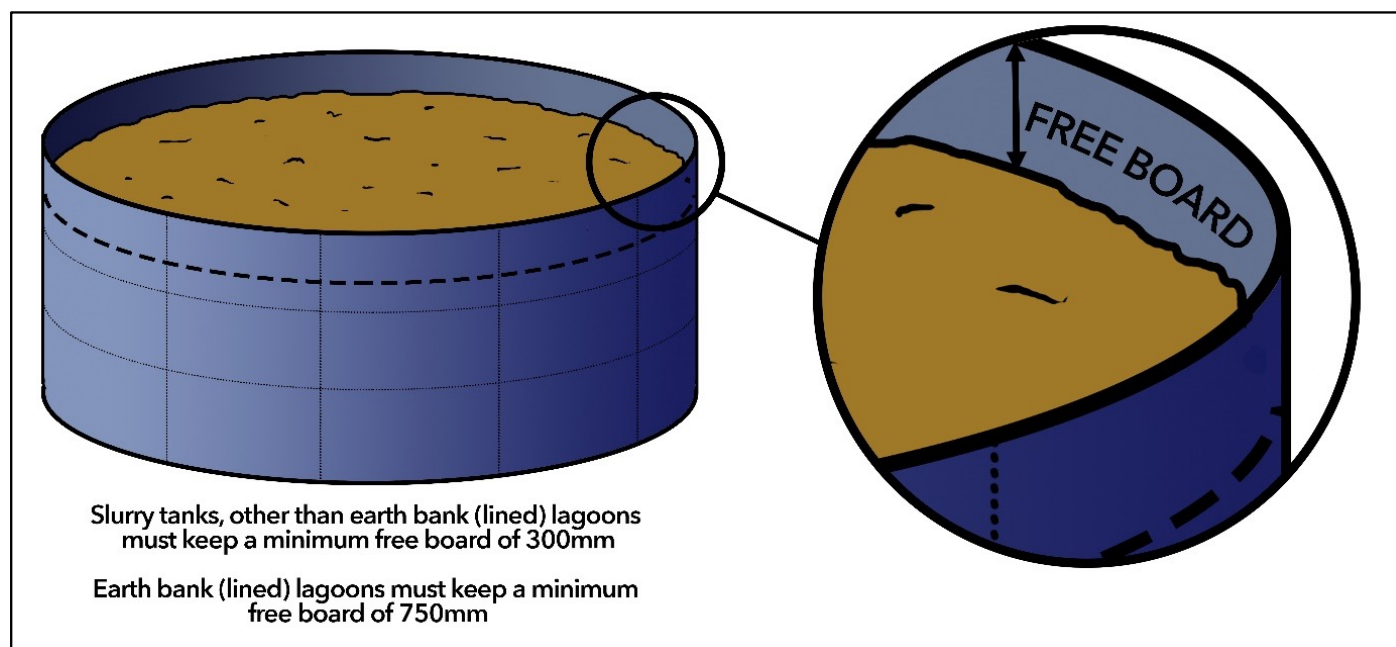


Figure 1.2. Slurry storage freeboard requirement

Existing slurry storage systems constructed prior to September 1991 **must** meet the above requirements by January 2026.

Existing slurry storage systems constructed or altered after September 1991 **must** meet the above requirements and the relevant British Construction Standards by January 2024 (Table 1.2).

New/altered slurry storage systems

If you are planning to install a new slurry storage system or substantially reconstruct or enlarge any existing system you **must**:

- consult with a suitably qualified engineer and have an engineering plan available for the proposed works
- notify and provide SEPA with the engineering plan at least 30 days prior to any work starting
- retain the engineers final sign-off certificate for the works for the life of the structure.

Any slurry storage system constructed or substantially reconstructed or enlarged after 1 January 2022 **must**:

- have a life expectancy of at least 20 years with proper maintenance, and
- where the walls are made of earth be lined with an impermeable sheet material with a design life of 20 years with proper maintenance.
- be situated at least 10 metres from any surface water or surface water drain.

Slurry bags

Where slurry is stored in a slurry bag it **must** be constructed of impermeable material of sufficient strength and integrity to ensure it does not burst or leak.

The slurry bag **must** be situated within a bund that:

- has a capacity of at least equivalent to that of the slurry bag
- is lined with an impermeable sheet material with a life expectancy of 20 years with maintenance
- has a mechanism to remove rainwater from the bund
- is not penetrated by any valve pipe or other opening other than as necessary to remove rainwater.

Field heaps

Where field heap middens are used, they **must not** be located on land that is:

- within 10m of any surface water, wetland or shoreline
- within 50m of any spring that supplies water for human consumption or any uncapped well or borehole,
- waterlogged
- sloped, unless a sufficient buffer zone is provided to prevent any contaminated run-off entering nearby surface waters, or
- has an average soil depth of less than 40cm over gravel or fissured rock.

Table 1.2. Transitional periods for slurry storage systems – what you have to do by when

Activity	Key Date
SEPA must be notified 30 days before work starts on any new, reconstructed, or substantially enlarged slurry storage facility.	1 January 2022
Slurry stores with planning permission granted prior to 1st January 2022 but not yet constructed must be fully compliant by 2024.	1 January 2024
Slurry stores built after 1991 (or that were substantially reconstructed or enlarged on or after 1st Sept 1991) must make any upgrades to be structurally compliant by 2024.	1 January 2024
Slurry stores built before 1991 (and not substantially enlarged or reconstructed since 1991) must be fully compliant by 2026.	1 January 2026
Farms which produce slurry must have sufficient capacity to store the total quantity of slurry likely to be produced in 22 weeks by housed cattle or 26 weeks by housed pigs.	1 January 2026 (outside NVZ)

Definitions:

Beef livestock units – for the purpose of these rules, in calculating beef livestock units, an animal of 2 years and older is 1 unit and an animal under 2 years is 0.5 of a unit. In general, the calculation should be based on the number of beef animals present on the 1 March and declared on the annual IACS form submitted to RPID annually.

Constructed farm wetland – A series of ponds for the treatment of lightly contaminated surface water, which have been constructed in such a manner that any discharge from the ponds does not pollute the water environment.

Freeboard – the distance from the level of the slurry to the top of the storage structure.

Impermeable sheet material – means:

- synthetic rubbers, EPDM (ethylene propylene diene monomer rubber) and butyl,
- plastics, including polyvinyl chloride, low density polyethylene and high-density polyethylene, and
- reinforced geomembranes

Livestock – any animal kept for use or profit as part of a commercial enterprise.

RAMS – Risk Assessment for Manure and Slurry map showing no-spread, high, medium and low risk sites for organic fertiliser application.

Slurry – excreta, including any liquid fraction, produced by livestock whilst in a yard or building. This includes any mixtures of excreta with bedding, feed residues, rainwater and washings from dungsteeds, middens and any buildings or yards used by livestock.

Slurry storage systems – a slurry storage tank, any reception pit or effluent tank used in connection with the slurry storage tank and any channels and pipes used in connection with the storage tank, reception pit or effluent tank.

Slurry storage tank – a lagoon, pit (other than a reception pit) or tower used for the storage of slurry.

Surface water – all standing or flowing water on the surface of the land, transitional water and coastal water.





Maintaining slurry storage systems

It is important to carry out routine inspections and annual maintenance on your slurry storage systems to ensure they remain impermeable and free from any structural defects.

Keep areas around slurry stores, free of soil, debris and vegetation to allow for any leakage to be identified and repaired promptly. Trees and shrubs should not be allowed to establish within rooting distance of lagoons and above ground stores. Most manufacturers will provide details of recommended maintenance which will ensure that the product is fit for use during the expected lifespan. Things to consider are:

- checking and maintaining all valves, greasing these annually when the store is empty
- visually inspecting the tank; metal towers can show corrosion at the point where sheets meet and join; degradation of the mastic between sheets can cause failure, resulting in a spill. Rust spots or electrolytic corrosion can be seen on metal stores whereas cracks in concrete structures can indicate a weakness and should be investigated further to prevent a catastrophic failure
- check for tightness and corrosion in the hoops, cables and straps for post-tensioned concrete above ground stores
- check and maintain couplings and fixings around side stirrers and outlet pipes for leakage
- concrete floors and aprons should be inspected for cracks or holes which will need repaired immediately to prevent further erosion or structural failure
- all slurry lagoon liners should be inspected annually when the store is empty and any repairs or replacements carried out before next use
- slurry lagoon leak detection systems should be regularly inspected and all chambers and pipes kept clear of debris
- earth banks should be checked for any subsidence
- pest control around lagoons will reduce the risk of liner damage from rodents and burrowing mammals.



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Silage

Silage can be made in clamps, bales or bulk bags (e.g. AgBag). In all cases silage and silage effluent must be handled and managed carefully to ensure no pollution occurs.

Where silage is made and stored in bales or bags they must:

- be situated at least 10m away from any surface water drains, ditch, burn, river, loch or shoreline when stored, opened or unwrapped
- be enclosed and sealed using impermeable membranes or bags, and
- where bulk bags are used, be sited on a firm level surface and incorporate a facility to safely remove effluent and be resealed when not in use

Silage clamps

All silage clamps, effluent channels and collection tanks must be maintained during their lifecycle to ensure they are kept free from any structural defects.

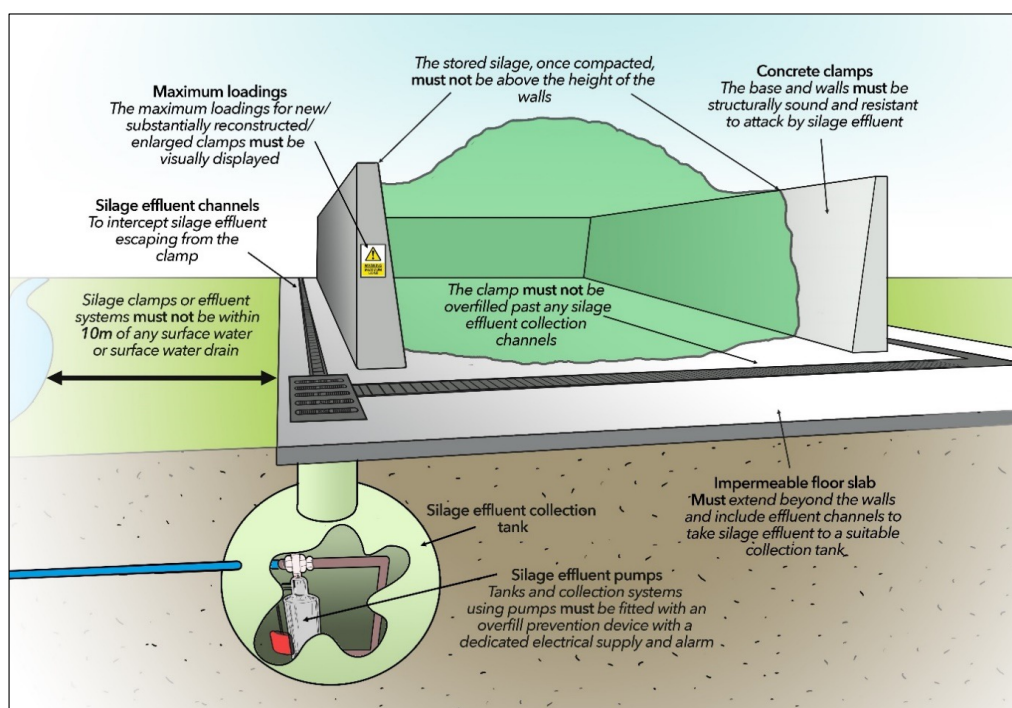


Figure 3.1. Silage clamp

New or altered clamps and tanks

If you are considering a new silage clamp or silage effluent collection tank or alterations to any existing clamp or tank you **must**:

- notify and provide SEPA with an engineering plan at least 30 days prior to any work starting
- retain the engineers final sign-off certificate for the works for the life of the structure.

Existing silage clamps constructed prior to September 1991 must meet the below requirements by January 2026.

Existing silage clamps constructed or altered after September 1991 must meet the below requirements and the relevant British Construction Standards by January 2024.

Earth bank clamps

All earth bank clamps **must**:

- have an impermeable floor slab and be constructed with channels to ensure all silage effluent is collected and conveyed to an appropriate silage effluent collection tank
- have the earth bank walls lined with an impermeable membrane such as 1000 gauge polyethylene or a similar material.
- be resistant to attack by silage effluent, especially the base and any channels or walls
- be located more than 10m away from any surface water or surface water drains. This includes their effluent collection systems
- never be overfilled past any silage effluent collection channels.

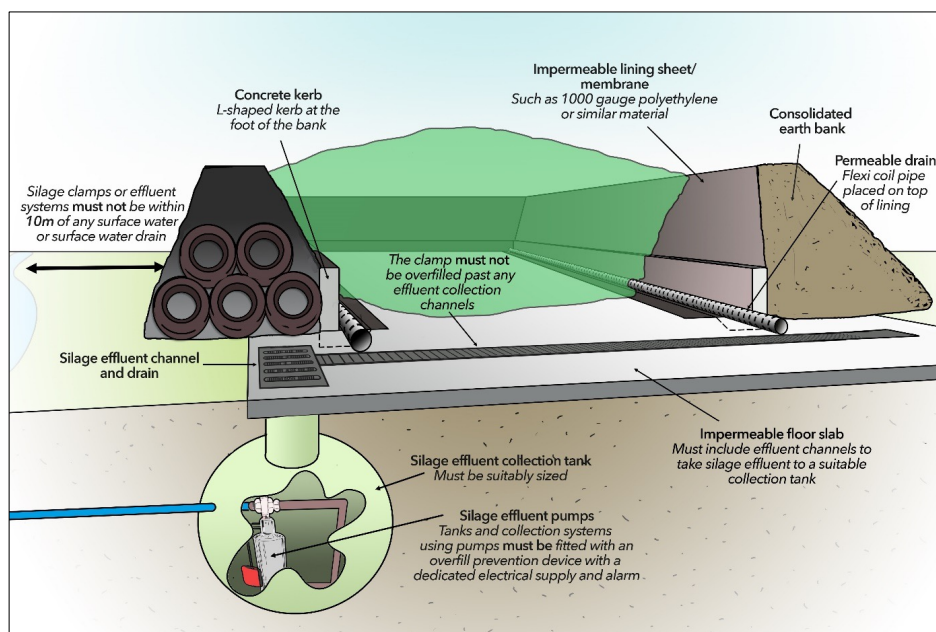


Figure 3.2. Earth bank clamps

Clamps with walls made of materials other than earth

All non-earth bank clamps **must**:

- have an impermeable floor slab which extends beyond the walls and is constructed with effluent channels to ensure all effluent is collected and conveyed to an appropriate effluent collection tank
- never have the stored silage, once compacted, above the height of the walls
- have the maximum loadings for any new or substantially reconstructed/enlarged clamp visibly displayed.
- be resistant to attack by silage effluent, especially the base and any channels or walls
- be located more than 10m away from any surface water or surface water drains. This includes their effluent collection systems
- never be overfilled past any silage effluent collection channels.

Silage effluent collection tanks

All silage effluent collection tanks **must**:

- be impermeable and resistant to acid attack
- be fitted with an automatic overflow prevention device, with a dedicated electrical supply and alarm, if any pumps are used
- be sized according to the capacity of the clamp (Table 3.1)
- never be installed, substantially reconstructed or enlarged without first being discussed with SEPA at least 30 days prior to any work commencing.

Table 3.1. Effluent tank capacity

Clamp capacity	Capacity of silage effluent tank
Less than 1500m ³	20 litres for every 1m ³ of clamp capacity
1500m ³ or greater	30m ³ (30,000 litres) plus 6.7 litres for every 1m ³ of silo capacity over 1500m ³

If you are considering a new silage clamp or silage effluent collection tank or alterations to any existing clamp or tank you **must**:

- consult with a suitably qualified engineer and have an engineering plan available for the proposed works
- notify and provide SEPA with the engineering plan at least 30 days prior to any work starting
- retain the engineers final sign-off certificate for the works for the life of the structure.

Silage effluent which is from an opened clamp and consists mainly of rainwater can be drained through a constructed farm wetland (CFW). The Constructed Farm Wetland Know the Rules Factsheet 5 gives details of types of run-off which may be conveyed to a CFW.

Definitions:

Constructed farm wetland – A series of ponds for the treatment of lightly contaminated surface water, which have been constructed in such a manner that any discharge from the ponds does not pollute the water environment.

Crop – any plant grown for a commercial purpose and includes cereals, root crops, grass and trees.

Draff – The residue of grain after fermentation of the grain in a brewing or distilling process.

Forage crop – any crop grown as food for livestock or for use in energy production.

Groundwater – water below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

Livestock – any animal kept for use or profit as part of a commercial enterprise.

Silage – any forage crop, including draff, which is being or has been conserved by fermentation or preservation or both, including the use of additives.

Silage effluent – effluent produced from any forage crop which is being made or has been made into silage or a mixture consisting wholly of or containing such effluent, rainwater or groundwater, emanating from a silo, silage effluent collection system or drain.





Maintaining silage storage systems

It is important to carry out routine inspections and annual maintenance checks on your clamps and collection systems to ensure they remain impermeable and free from any structural defects. The best time to carry out these checks is when the clamp is empty before first cut silage is taken.

Things to consider:

- Power wash the structure to remove debris and allow all walls, channels, joins and floor slab to be inspected. Ensure washings are collected in the collection system.
- Check the condition of the floor to ensure it is impermeable. Pay close attention to the front of the floor slab as this area receives more wear and tear due to effluent attack, weather damage and vehicle movements. If aggregate is showing or loose on a concrete floor you may require to reseal the floor using concrete or a hot rolled asphalt.
- Check effluent channels for cracks, these should be sealed using bitumen paint or suitable resin which is acid resistant.
- Check all joins especially between the floor and walls. Any cracks should be sealed using bitumen paint or suitable acid resistant resin prior to silage making.
- If clamp has concrete walls, ensure sealant is present and in good condition at any joins. If you find the sealant is coming away or in poor condition, then it should be removed and resealed using a suitable acid resistant sealant.
- When sheeting the walls of an earth bank clamp, it is good practice to ensure the membrane is extended onto the floor and a flexicoil pipe is laid at the base of the wall around the inside of the clamp to the channel. This will protect the floor and direct all effluent to the collection channel.



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Constructed farm wetlands

Constructed farm wetlands (CFW) can give both financial savings and improvements to the water environment, whilst helping you comply with regulations.

It is important that you seek expert advice when considering installing a CFW and you **must** contact SEPA at least 30 days prior to any work commencing.

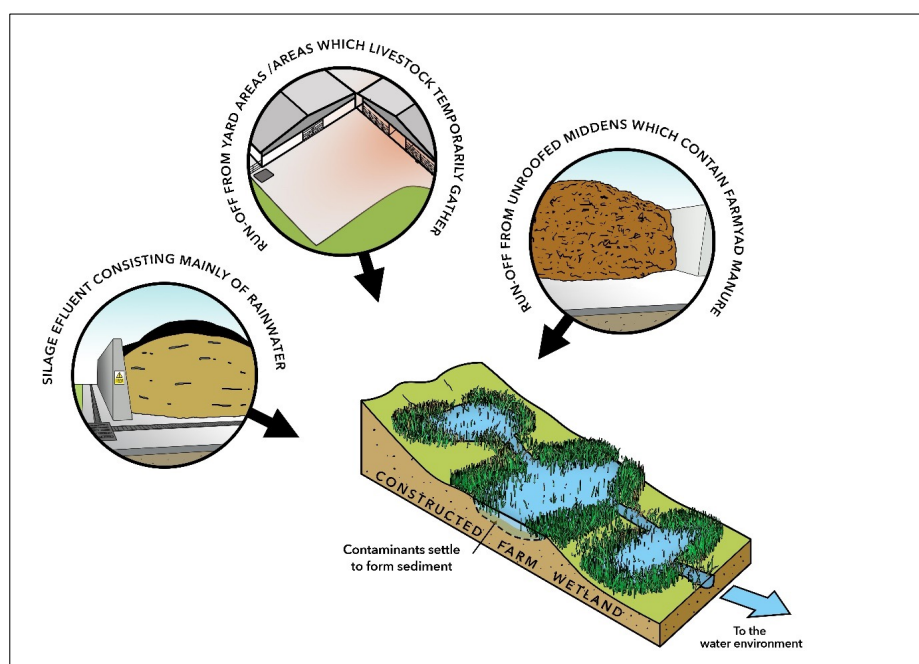


Figure 5.1. Run-off suitable for treatment by a constructed farm wetland

Run-off from the following locations and activities must not be directed to a CFW:

- areas of the steading where livestock are housed or fed
- areas where livestock are being moved to or held before, during or after milking
- run-off from silage pits when the pit is closed, having material added or contains any other material such as draff, anaerobic digestate material or inorganic fertilisers
- run-off containing pesticides and/or from pesticide handling areas
- any run-off containing sheep dip liquid or from areas where sheep have been held after the treatment via a dipper or been treated with “spot-on” or “pour-on” treatments.

The following can be put into a CFW (Figure 5.1):

- lightly contaminated run-off produced from:
 - unroofed areas where livestock are gathered no more than once a week
 - uncovered steading yard areas used for the movement and temporary handling of livestock such as loading/unloading, or tracks and paths used only for occasional movement from one steading area to another
 - unroofed middens on steadings which contain farmyard manure
- silage effluent which consists mainly of rainwater when the silo is open for use and no crop is added to the silo; the effluent **must** drain to the CFW via a dedicated channel/pipe in situated on the floor of the silo.

At all times, all reasonable steps **must** be taken to ensure that a constructed farm wetland does not cause pollution of the water environment.

Definitions:

Constructed farm wetland – A series of ponds for the treatment of slurry or silage effluent consisting mainly of rainwater, which have been constructed in such a manner that any discharge from the ponds does not pollute the water environment.

Crop – any plant grown for a commercial purpose and includes cereals, root crops, grass and trees.

Draff – The residue of grain after fermentation of the grain in a brewing or distilling process.

Groundwater – water below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

Livestock – any animal kept for use or profit as part of a commercial enterprise.

Silage effluent – effluent produced from any forage crop which is being made or has been made into silage or a mixture consisting wholly of or containing such effluent, rainwater or groundwater, emanating from a silo, silage effluent collection system or drain.

Water Environment – all surface water, ground water and wetlands.



FARMING & WATER SCOTLAND



Storage of oil

*All oil, regardless of the amount, **must** be stored in a suitable container that is strong enough and of suitable capacity to hold the oil without leaking or bursting. The tank and its components should be positioned to avoid damage, so far as is reasonably practicable.*

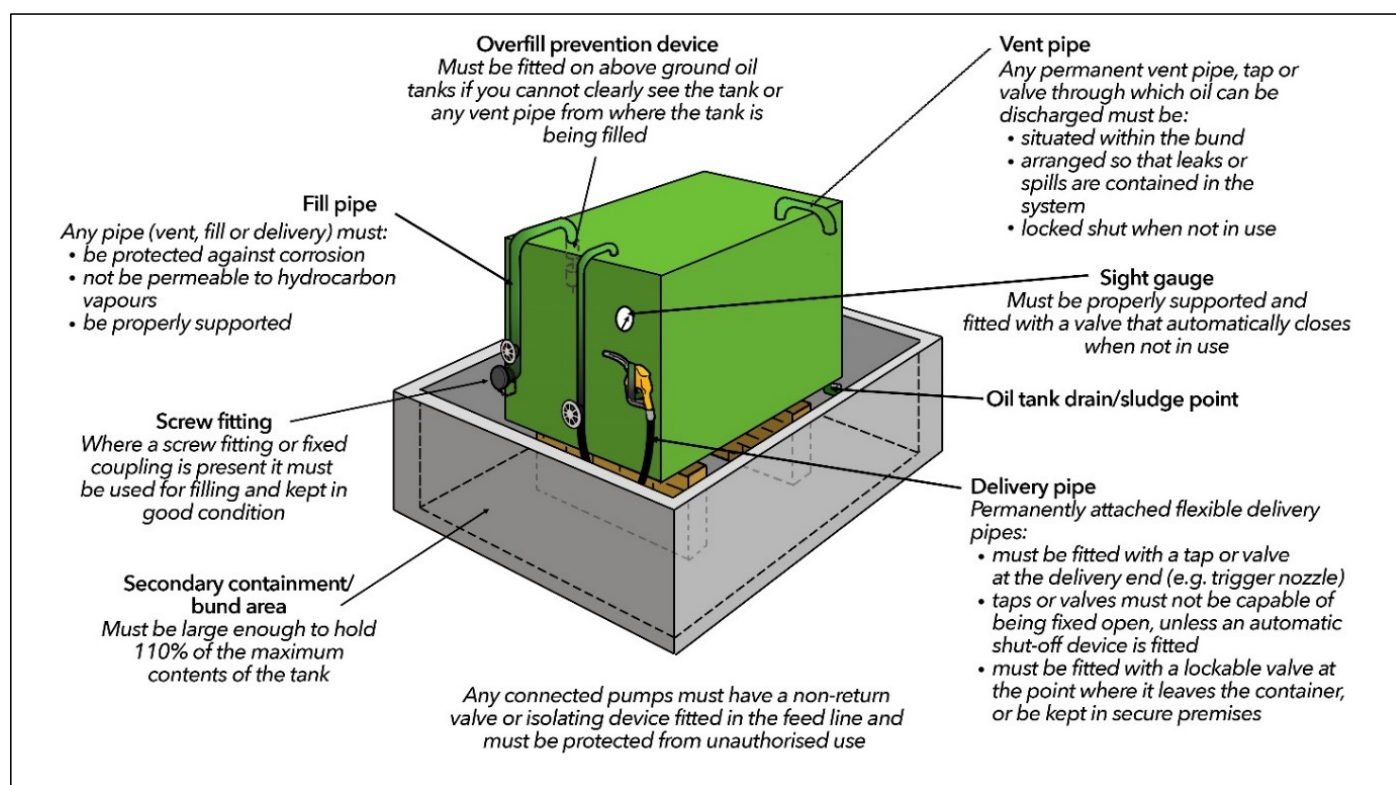


Figure 6.1. Oil storage requirements

Where the tank/container has a storage capacity of 200 litres or more it must be within a secondary containment system (bund or drip tray) that will catch any oil leaking from the container or its ancillary pipe work and equipment.

Fuel stations

Fuel stations are typically supplied as all-in-one systems that include an integrally bundled plastic or steel tank, with all valves and pipework contained within the integrated bund. These units are specially designed to capture any fuel that is spilt as you refuel vehicles or equipment, protect against theft and allow measurement of any fuel dispensed, meeting many of the requirements listed below for fixed storage tanks.

Secondary containment systems/bunds

NOTE: Secondary containment is not required for tanks, with a capacity of 2500 litres or less, that are used solely for domestic heating or cooking – See Installing new or altering existing domestic oil storage tanks below for associated requirements.

The bund base and walls **must**:

- be impermeable to water and oil and checked regularly for leaks
- not include any valve, pipe or opening, that could be used to drain the system.

Table 6.1. Bund capacity

Storage details	Required bund capacity
One tank (fixed tanks, mobile bowser, IBC etc.)	Containment must be large enough to hold at least 110% of the maximum contents of the tank.
More than one tank	Containment must be large enough to hold at least 110% of the largest tank, or, 25% of the total storage capacity of all tanks, whichever is greater.
Drum storage	Containment must be large enough to hold at least 25% of the total capacity of the drum(s).

Emptying the bund

Any water removed from the bund, contaminated with oil, **must** be disposed of as special waste, using an appropriately licenced waste contractor.

Fixed tank requirements

Fixed tanks include gravity fed tanks which are typically single/double skinned, steel/plastic tanks, with little or no internal bunding. You **must** ensure the requirements for '**Secondary containment**' and '**fixed tanks**' detailed below are met.

All valves, filters, sight gauges, vent pipes, delivery pipes and other ancillary equipment must be kept within the bund when not in use.

Delivery pipes

Where oil from the tank is delivered through a flexible pipe which is permanently attached to the tank or delivery pump:

- the pipe **must** be fitted with a tap or valve (e.g. trigger nozzle) at the delivery end which closes automatically when not in use
- the tap or valve **must not** be capable of being fixed in the open position unless the pipe is fitted with an automatic shut off device
- the pipe **must** –
 - have a lockable valve where it leaves the container, which is locked shut when not in use; or
 - be situated in secure premises that prevents unauthorised access
- when not in use the pipe **must** be kept within the bund or positioned over an area which drains to a suitable oil interceptor unless the pipe is enclosed in a secure cabinet (equipped with a drip tray) which is locked shut.

Sight gauges

Any sight gauge **must** be properly supported and fitted with a valve which closes automatically when not in use.

Piping

Any fill pipes, draw off pipes or overflow pipes **must**:

- be protected against corrosion
- not be permeable to hydrocarbon vapours
- be properly supported.

Permanent vent, pipe or tap

Any permanent vent pipe, tap or valve through which oil can be discharged from the tank to the open **must** be:

- situated within the bund
- arranged so that any oil discharged from the tank other than to its intended destination is contained within the system
- in the case of a tap or valve, fitted with a lock and locked shut when not in use.

Screw fitting or other fixed coupling

Where a screw fitting or other fixed coupling is fitted, it **must** be maintained in good condition and used whenever the tank is being filled.

Overfill protection device

Above ground tanks **must** be fitted with an automatic overfill protection device (which may include an alarm sounding device) if you cannot clearly see the tank or any vent pipe from where the tank is filled.

Pumps

Any pump **must** be:

- fitted with a non-return valve or an isolating device in its feed line
- protected from unauthorised use.

Underground fixed storage tanks additional requirements

Any fill pipe, draw off pipe or overflow pipe **must**:

- have accessible mechanical joints, if present
- have adequate facilities for detecting leaks
 - if a leak detection device is fitted it **must** be maintained and tested, at least every 5 years, to ensure that it works properly
 - if a leak detection device is not fitted, it **must** be tested for leaks before its first use, with further testing at least every 5 years for pipes with mechanical joints, or every 10 years for pipes without mechanical joints.

Mobile bowers

Any tap or valve permanently fixed to the bowser through which oil can be discharged to the open **must** be locked shut when not in use.

Where oil is delivered through a flexible pipe which is permanently attached to the mobile bowser you **must** ensure:

- the pipe is fitted with a manually operated pump or a valve at the delivery end which automatically closes when not in use
- the pump or valve is locked shut when not in use
- the pipe is fitted with a lockable valve at the end where it leaves the container and is locked shut when not in use

Any sight gauge **must be** secured to the mobile bowser and is fitted with a valve or tap which is locked when not in use.

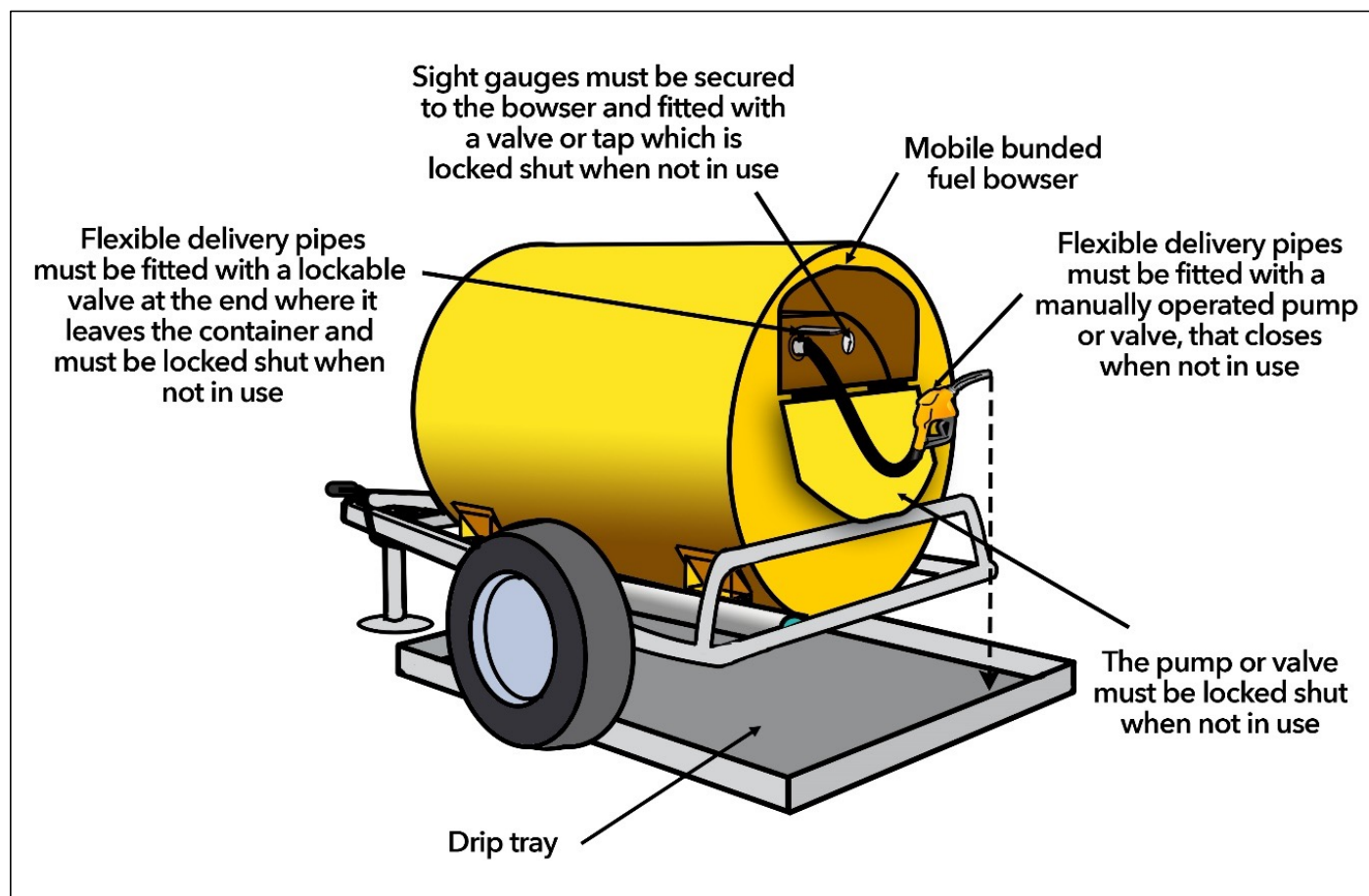


Figure 6.2. Mobile bunded fuel bowser with drip tray

Definitions:

Oil – includes petrol, diesel, central-heating oil, mineral and synthetic oils, vegetable and plant oils, heavy oils such as liquid bitumen, oil-based solvents such as kerosene, and waste oil.

Tanks – include fixed tanks (e.g. gravity fed tanks and fuel stations), mobile bowzers and tanks feeding fixed commercial appliances (e.g. grain dryers.).

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Managing livestock

Poaching by livestock can remove grass and vegetation cover. This can make the land more susceptible to run-off, erosion and in severe instances may lead to bank collapse, especially during periods of wet weather. Increased field run-off can result in water pollution from silt, nutrients, pesticides and faecal bacteria.

Livestock **must not**:

- cause significant poaching or erosion within 5 metres of any surface water, wetland or shoreline (Figure 7.1)
- cause significant poaching or erosion within 5 metres of any springs where the water is used for human consumption, or uncapped wells or boreholes
- enter land within 5 metres of any springs where the water is used for human consumption, or uncapped wells or boreholes.



Figure 7.1. Removal of bankside vegetation by livestock poaching

Livestock Feeders **must not** be:

- sited within 10 metres of any surface water, wetland or shoreline
- sited within 10 metres of any springs where the water is used for human consumption, or uncapped wells or boreholes.

Watering points or feeders **must not** cause water pollution. Make sure any contaminated run-off from land where livestock congregate to access watering points or feeders can't enter any surface water, wetland, springs wells or boreholes.

Definitions:

Livestock – any animal kept for use or profit as part of a commercial enterprise



Organic fertiliser application

Organic fertilisers such as slurry, manure, sewage sludge and anaerobic digestate (AD) are valuable fertilisers when applied to land at the right time and in the right quantities.

Before any application takes place a **RAMS (Risk Assessment for Manure and Slurry)** map **must** be produced and provided to the person carrying out the application (see Factsheet 9).

NB: If you have land within a Nitrate Vulnerable Zone (NVZ) additional rules will apply.

Crop requirement

To make efficient use of fertilisers it is important to take account of the nutrients in organic fertilisers when planning fertiliser applications. When applying fertiliser you **must not**:

- exceed the crop requirement for nitrogen at time of application
- apply in excess of the amount required to maintain the target soil P status.

For more information on managing soil phosphorus see **SRUC Technical Note 668**.

Land Suitability

Taking account of the weather, conditions of the land and the location of features such as surface waters can greatly reduce the risk of causing pollution.

When applying organic fertiliser, you **must not**:

- apply during heavy rainfall or if heavy rain is forecast within 24 hours.
- apply to land that is:
 - within 10m of any surface water, wetland or shoreline
 - within 50m of any spring that supplies water for human consumption or any uncapped well or borehole
 - waterlogged
 - frozen (unless its farmyard manure (FYM) outside an NVZ)
 - snow covered
 - sloping, unless a sufficient buffer is provided to intercept any run-off to prevent slurry/contaminated run-off reaching a surface water, or
 - has an average soil depth of less than 40cm over gravel or fissured rock.

Slurry and Liquid Anaerobic Digestate Application Equipment

Low emission, precision slurry and liquid anaerobic digestate (AD) spreading systems give more control over application and minimise run-off and emissions.

All Spreading equipment **must** be kept maintained in a good state of repair.

From **1 January 2023**, slurry **must not** be applied using a raised splash plate or a rain gun and precision spreading equipment **must** be used when:

- applying liquid AD
- Slurry is applied;
 - by a contractor
 - on dairy farms, milking more than 100 cows
 - on beef farms keeping more than 200 beef livestock units (see definitions).
 - on pig farms keeping more than 800 sows or fattening pigs.

From **1 January 2027**, all slurry **must** be applied using precision equipment (Table 8.1).

Table 8.1 – Transitional periods for spreading slurry and liquid AD – what you have to do by when.

Activity	Key Date
Liquid digestate <u>must</u> be applied using precision equipment	1 January 2023
Slurry <u>must not</u> be applied using a raised splash plate or rain gun	
Slurry <u>must</u> be applied using precision equipment if applied by a contractor	
Slurry <u>must</u> be applied using precision equipment if applied on farms with more than 100 milking cows, or more than 200 beef cattle livestock units	
Slurry <u>must</u> be applied using precision equipment if applied on pig units with more 800 fattening pigs or 800 sows.	
All slurry application <u>must</u> be applied using precision equipment	1 January 2027

Definitions:

Anaerobic Digestate or liquid digestate – means whole digestate, the liquid fraction or any run-off from the storage of fibrous residue, resulting from an aerobic digestate process of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process.

Beef livestock units – for the purpose of these rules, in calculating beef livestock units, an animal of 2 years and older is 1 unit and an animal under 2 years is 0.5 of a unit. In general, the calculation should be based on the number of beef animals present on the 1 March and declared on the annual IACS form submitted to RPID annually.

Crop – any plant grown for a commercial purpose and includes cereals, root crops, grass and trees.

Livestock – any animal kept for use or profit as part of a commercial enterprise.

Organic fertilisers – for the purpose of these rules and guidance, organic fertiliser includes bulky organic fertilisers such as manure, slurry and anaerobic digestate.

Precision spreading equipment – includes dribble bars, band spreaders, trailing shoe or direct injection systems which apply organic fertilisers close to the growing crop.

RAMS – Risk Assessment for Manures and Slurry map showing no-spread, high, medium and low risk sites for organic fertiliser application.

Slurry – excreta, including any liquid fraction, produced by livestock whilst in a yard or building. This includes any mixtures of excreta with bedding, feed residues, rainwater and washings from dungsteads, middens and any buildings or yards used by livestock.

Surface Water – all standing or flowing water on the surface of the land, transitional water and coastal water.

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Risk Assessment for Manure and Slurry

*A Risk Assessment for Manure and Slurry (RAMS) **must** be carried out in respect of any land which receives organic fertiliser such as slurry, manure or digestate.*

The RAMS **must** include a map of the land and be provided to the person carrying out the application (e.g. contractor, farm worker etc) (Figure 9.1).

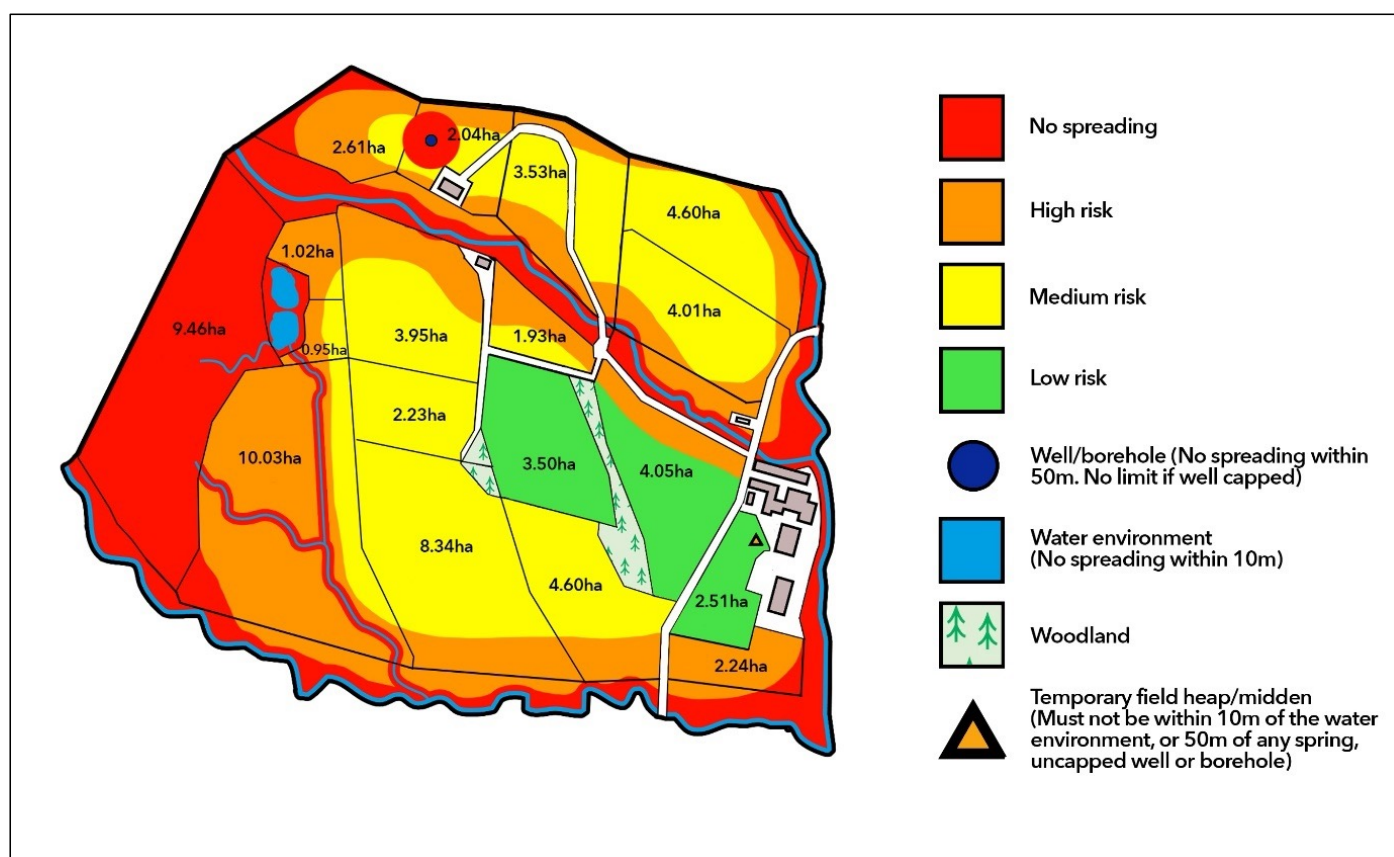


Figure 9.1. Risk Assessment for Manure and Slurry (RAMS) Map.

Guidance on producing a RAMS map is provided on the Farming and Water Scotland website. As a minimum the RAMS map **must** show:

- field boundaries
- area of field in ha
- location of all surface waters, springs, wells, boreholes, underground water tanks
- land with a slope of 12 degrees or more
- location of any field heaps
- no spread zones around surface waters, springs and wells
- no spread areas where the land is too steep or soils too shallow
- any other areas of high risk to the water environment.

Step 1 – Start off with a map of the farm showing:

- the field boundaries and area of each field
- all watercourses (including ditches, ponds, wetland etc) and wells, springs and any storage tanks or similar structures for supplying water (shown in blue in above map)
- location of field heaps (must not be on any area identified as a no spread zone or high-risk area)

Step 2 – identify the no spread zones (shown in red above) including:

- 10m of any surface water, as measured from top of bank (Figure 9.2)
- 50m of any uncapped well or borehole
- 50m of any spring that supplies water for human consumption
- Land with an average soil depth of less than 40cm over gravel or fissured rock.
- Land that is sloping towards a watercourse, unless a suitable buffer can be maintained to adequately intercept any run-off to prevent the fertiliser reaching water.

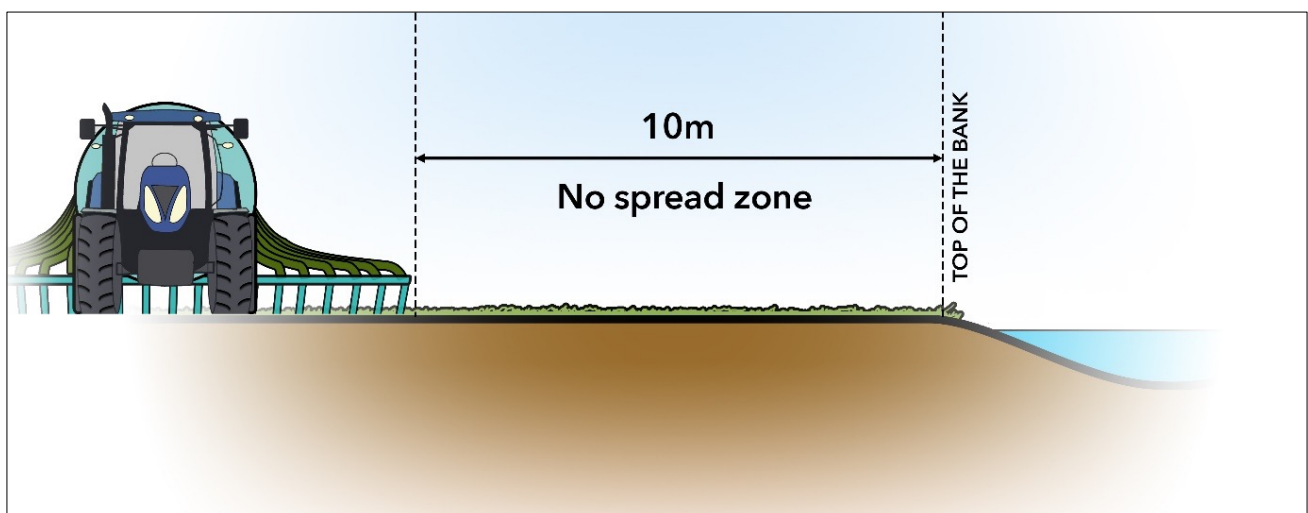


Figure 9.2. Minimum slurry no-spread zone around water courses.

Step 3 – Identify the high-risk areas:

- Any area of land with a slope of 12 degrees or more (if not already highlighted in the no-spread zone)
 - Any other areas of high risk to the water environment, such as:
 - Areas with a risk of flooding more often than one in five years.
 - Fields with drainage installed in previous 12 months.
 - Poorly drained, regularly waterlogged or severely compacted land.

Step 4 – Identify the medium risk areas:

- slopes with a gradient of between 4 and 12 degrees in the vicinity of watercourses.
- land sloping towards watercourses or water supplies
- Imperfectly drained land or areas which can be prone to waterlogging following heavy rain and ground conditions will need to be checked prior to spreading

Step 5 – Identify low risk areas:

- slopes with a gradient up to 4 degrees.
- land with no artificial drainage.
- land that presents a lower pollution risk, but where other factors that could change the spreading risk, such as flooding or frost/snow conditions, will still have to be taken into account.

Definitions:

Anaerobic Digestate or liquid digestate – means whole digestate, the liquid fraction or any run-off from the storage of fibrous residue, resulting from an aerobic digestate process of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process.

Organic fertilisers – for the purpose of these rules and guidance, organic fertiliser includes bulky organic fertilisers such as manure, slurry and anaerobic digestate

Precision spreading equipment – includes dribble bars, band spreaders, trailing shoe or direct injection systems which apply organic fertilisers close to the growing crop.

RAMS – Risk Assessment for Manures and Slurry map showing no-spread, high, medium and low risk sites for organic fertiliser application

Slurry – excreta, including any liquid fraction, produced by livestock whilst in a yard or building. This includes any mixtures of excreta with bedding, feed residues, rainwater and washings from dungsteads, middens and any buildings or yards used by livestock.

Surface Water – all standing or flowing water on the surface of the land, transitional water and coastal water.

FARMING & WATER SCOTLAND



Cultivation

Soils in good health can increase yields and decrease pollution risks. Large quantities of soil, land and nutrients can be lost from the farm in a matter of minutes through water or wind erosion.

Land **must** always be cultivated in a way which minimises the risk of pollution to any surface water or wetland.

Land **must not** be cultivated when it is:

- within 2m of any surface water, wetland or shoreline (Figure 11.1)
- within 5m of any springs where the water is used for human consumption, or uncapped wells or boreholes
- waterlogged

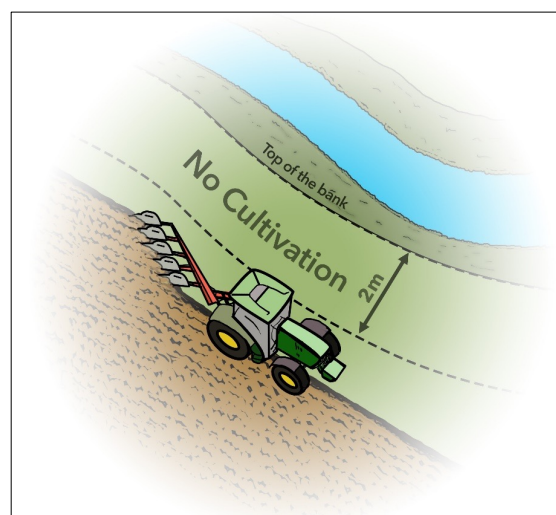


Figure 11.1. A minimum 2m buffer strip must be maintained between the watercourse and any cultivation practices.

Definitions:

Crop – any plant grown for a commercial purpose and includes cereals, root crops, grass and trees.

Cultivation – the preparation of land prior to planting or harvesting any crop.

Surface water – all standing or flowing water on the surface of the land, transitional water and coastal water.

FARMING & WATER SCOTLAND



Inorganic and liquid fertiliser storage and application

Inorganic and liquid fertilisers help to optimise crop yields when applied at the right time and in the right quantities, but they can cause significant pollution if they find their way into any surface water around the farm.

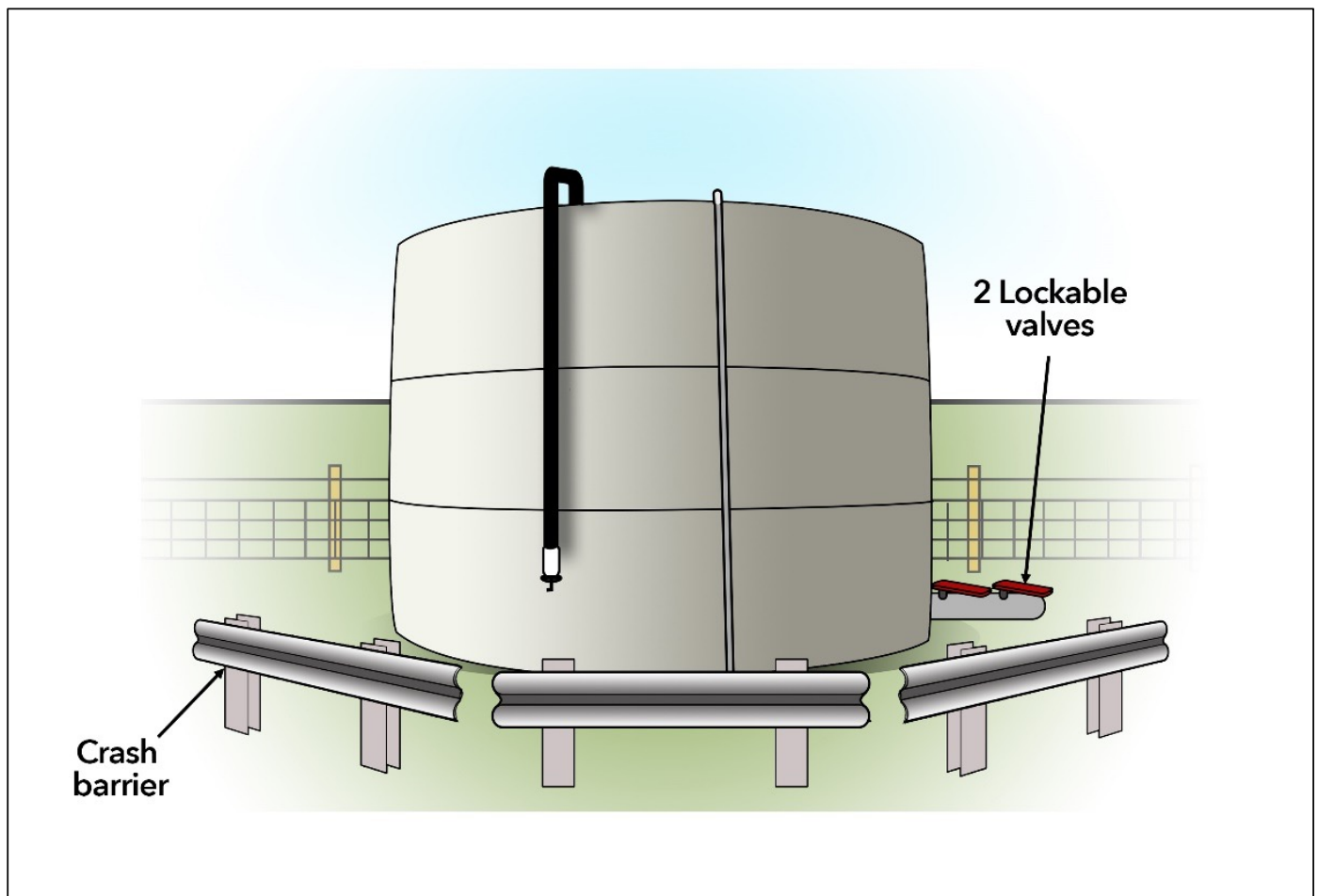


Figure 10.1. Inorganic and liquid fertiliser storage.

General storage of inorganic or liquid fertilisers

Inorganic or liquid fertiliser, including temporary storage in a mobile tank or bowser, **must** be stored on land that is:

- 10m from of any surface water, wetland or shoreline.
- 50m from any spring that supplies water for human consumption or any uncapped well or borehole.
- not waterlogged
- able to have an average soil depth of less than 40cm over gravel or fissured rock, unless the fertiliser is stored in an impermeable container.

Impermeable tanks used for the store of inorganic liquid fertiliser **must**:

- have a lockable double valve on the outlet that is closed and locked when the tank is unattended
- be located above ground
- be protected from vehicle collision.

Inorganic liquid fertiliser stored in a field **must** be contained in a tank, bowser or spreading equipment which:

- has hatches and lids are securely closed
- has outlets that are securely closed and locked, except when the fertiliser is being transferred or applied
- is held on a support in such a way that it cannot become dislodged, and the support is stable under the fully loaded weight of the tank or bowser and cannot itself become dislodged.

Application of inorganic or liquid fertilisers

When transferring liquid fertiliser to a tank, bowser or spreading equipment, all reasonable steps **must** be taken to prevent any spillage or leakage entering the water environment.

Crop requirement

To make efficient use of fertilisers it is important to take account of the nutrients in inorganic fertilisers when planning fertiliser applications. When applying fertiliser, you **must not**:

- exceed the crop requirement for nitrogen at time of application
- apply in excess of the amount required to maintain the target soil P status.

For more information on managing soil phosphorus see **Technical Note 668**.

Land suitability

Taking account of the weather, conditions of the land and location of features such as surface waters can greatly reduce the risk of causing pollution. When applying inorganic fertiliser, you **must not**:

- apply during heavy rainfall or if heavy rain is forecast within 24 hours
- apply to land that is:
 - within 2m of any surface water, wetland or shoreline
 - within 5m of any spring that supplies water for human consumption or any uncapped well or borehole
 - waterlogged
 - frozen
 - snow covered
 - sloping, unless a sufficient buffer is provided to intercept any run-off to prevent slurry reaching a surface water, or
 - has an average soil depth of less than 40cm over gravel or fissured rock.

Any equipment used to apply fertiliser **must** be maintained in a good state of repair and fertiliser **must** always be applied in such a way and at such times that the risk of pollution is minimised.

Definitions:

Container – means a single or double skinned fixed tank, a drum, a mobile bowser or (even if not connected to fixed pipe or fixed pipework) an intermediate bulk container.

Crop – any plant grown for a commercial purpose and includes cereals, root crops, grass and trees.

Cultivation – the preparation of land prior to planting or harvesting any crop.

Fertiliser – any substance containing nutrients which is utilised on land to enhance plant growth, but excludes forestry brash.

Surface Water – any ditch, burn, river, wetland or loch.

FARMING & WATER SCOTLAND



Pesticides

The use of pesticides is an essential part of agriculture and horticulture to produce the quality and quantity of food society needs. However, inappropriate storage, preparation, use and disposal of pesticides can pose a significant risk to the water environment.

Pesticides must be used in accordance with the terms and instructions of the relevant product approval.

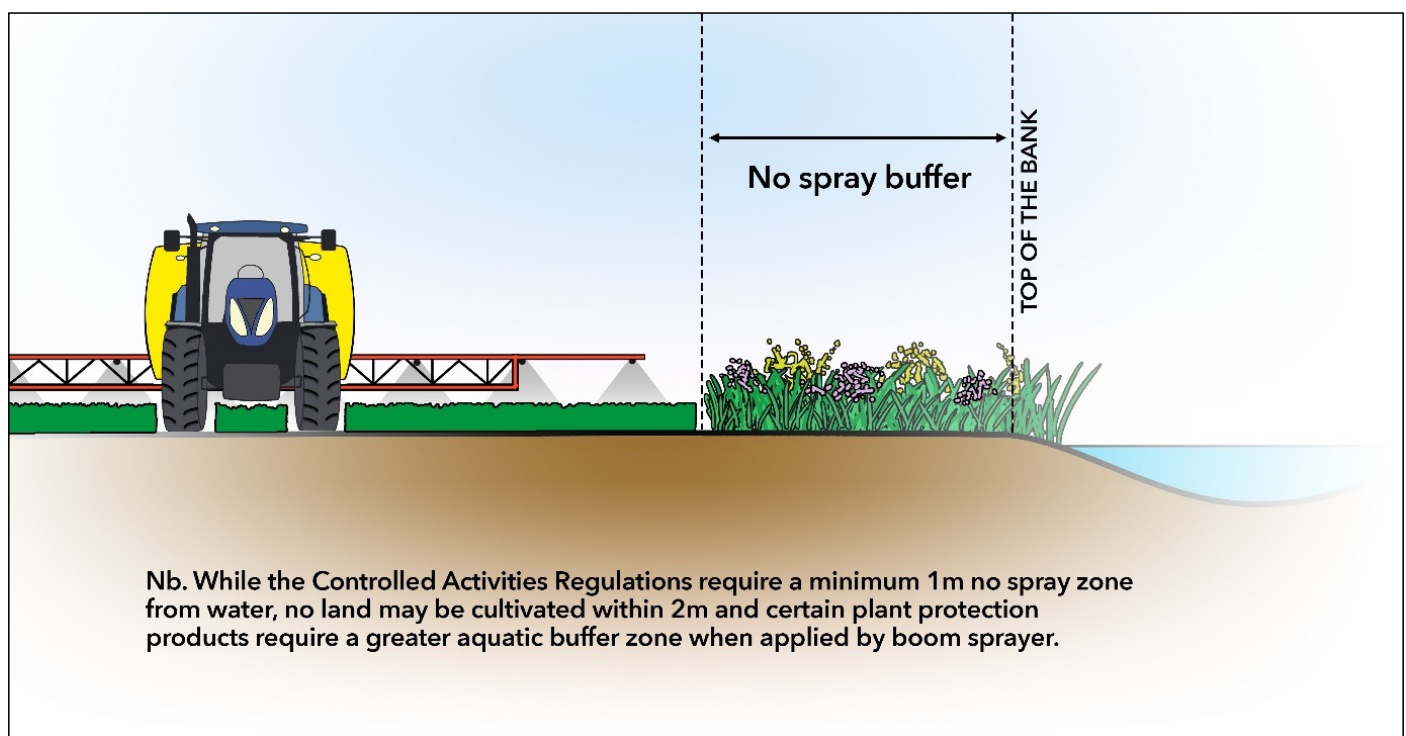


Figure 12.1. No spray buffer zone

Storage of pesticides

Pesticide, including any used packaging which has been in contact with the pesticide (particularly foil caps from the seals off pesticide containers) **must not** be stored:

- within 10 metres of the water environment
- within 50 metres of any spring that supplies water for human consumption, or any well or borehole (unless the well or borehole is capped to prevent the ingress of pesticide)
- on an impermeable surface which drains to a surface water drainage system

Unless the pesticide is stored in such a way that any leaks or spills or any exposed pesticide on used packaging cannot reach the water environment or any surface water drainage systems, including being transported by rainfall.

Preparation of pesticides

The preparation of pesticides for application, and the filling, cleaning or maintenance of pesticide sprayers or other devices used to apply pesticides:

- **must** be done in a manner which prevents spillages, run-off or washings entering the water environment or any surface water drainage system
- **must not** be done within 10 metres of the water environment (as measured from the top of the bank, or in coastal water from the shoreline) or any opening into a surface water drainage system
- pesticide sprayers **must** be maintained in a good state of repair, such that there is no leakage from any part of the equipment. The equipment must be calibrated to ensure the correct application rate
- sprayers and other pesticide application equipment **must not** be filled from the water environment unless:
 - a device preventing back syphoning is fitted to the system: or
 - the water is first placed in an intermediate container
- Pesticide treated plants **must not** be stored or soaked in the water environment.

Application of pesticide

Unless being used to control invasive non-native species, pesticide **must not** be applied into, onto or over ground, or allowed to drift onto or over ground that is:

- frozen, snow covered or waterlogged (unless controlling fungal disease and in which case all precautions are taken to minimise the risk of pesticide entering the water environment)
- within 1 metre of the water environment (Figure 12.1)

- sloping unless there is a sufficient buffer to prevent pesticide run-off entering the water environment
- within 50 metres of any spring that supplies water for human consumption, or any well or borehole (unless the well or borehole is capped to prevent the ingress of pesticide)
- impermeable draining to a surface water drainage system, or along roads, railway lines, permeable surfaces or other infrastructure unless measures are taken to minimise the risk of pesticides entering the water environment.

Application of pesticide **must** be carried out in such a way that minimises the risk of pollution of the water environment, and in particular pesticides **must not** be applied during:

- rainfall
- conditions when there is a risk that spray can drift or be blown outwith the target area.

Pesticide may be applied within 1 metre of the water environment where the pesticide is being used to control invasive non-native species (eg Giant Hogweed); and

- the pesticide product used is approved for aquatic use and no pesticide enters the water environment
- the correct equipment is used to minimise damage to non-target species
- the rules regarding application of pesticide (above) regarding weather conditions, slope and distances from water supplies are followed
- care is taken to ensure that the application does not result in excessive erosion to the banks of the water environment
- no application is made within 250 metres of an abstraction from the water environment used for providing water for human consumption.
- Contact SEPA prior to applying pesticide near water to control plants which are not classed as invasive non-native species or where pesticide is to be applied to plants in water.

Disposal of pesticide washings

Where waste pesticide washings are disposed of to land, you must hold a licence under the Controlled Activities Regulations (issued by SEPA) and you must adhere to the conditions contained within the licence.

Other options include:

- using the services of a licensed waste disposal contractor
- disposal to a biobed or biofilter (Figure 12.2) – a waste exemption must be registered with SEPA
- application to the treated or untreated crop within the terms of the product approval (ensure you do not go over the maximum dose).

Disposal of pesticide washings

Where waste pesticide washings are disposed of to land, you **must** hold a licence under the Controlled Activities Regulations (issued by SEPA) and you **must** adhere to the conditions contained within the licence. Other options include:

- using the services of a licensed waste disposal contractor
- disposal to a **biobed or biofilter** (Figure 12.2) – a waste exemption **must** be registered with SEPA
- application to the treated or untreated crop within the terms of the product approval (ensure you do not go over the maximum dose).

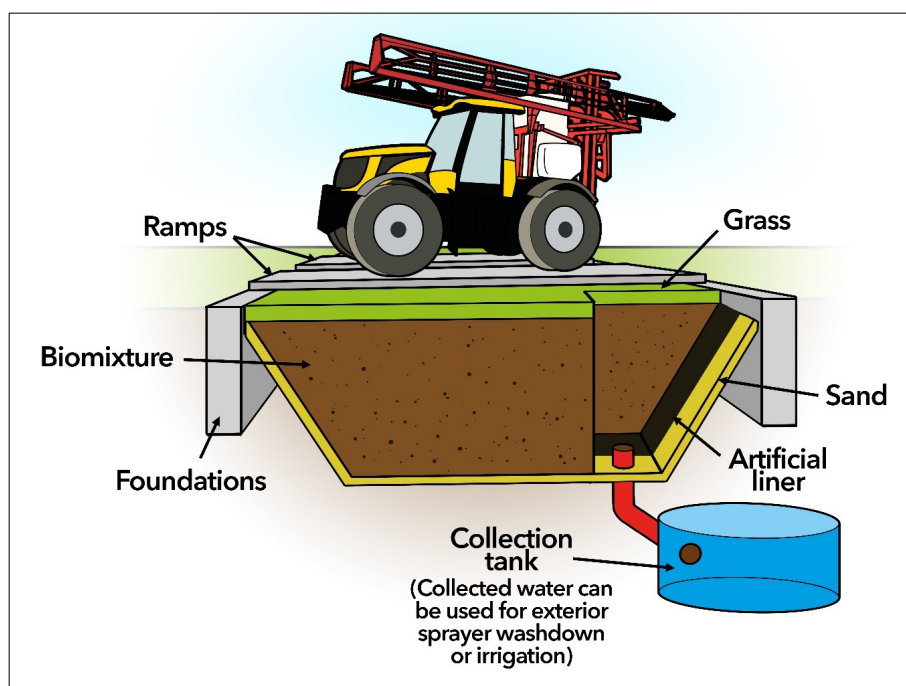


Figure 12.2. Example of a biobed.

Further guidance on obtaining an authorisation to dispose of pesticide washings to land can be found on the **SEPA website**.

Definitions:

Crop – any plant grown for a commercial purpose and includes cereals, root crops, grass and trees.

Groundwater – water below the surface of the ground in the saturation zone and in direct contact with the ground or subsoil.

Pesticides – Plant protection products (PPPs) are 'pesticides' that control pests, weeds and diseases. Common types of PPPs used on farms include insecticides, fungicides, herbicides, molluscicides and plant growth regulators.

Water Environment – all surface water, groundwater and wetlands.

FARMING & WATER SCOTLAND



Sheep dipping and handling facilities

Sheep dipping plays an important role in animal welfare and sheep productivity. However, dips and pour-on treatments can cause significant and long-lasting damage to the water environment.

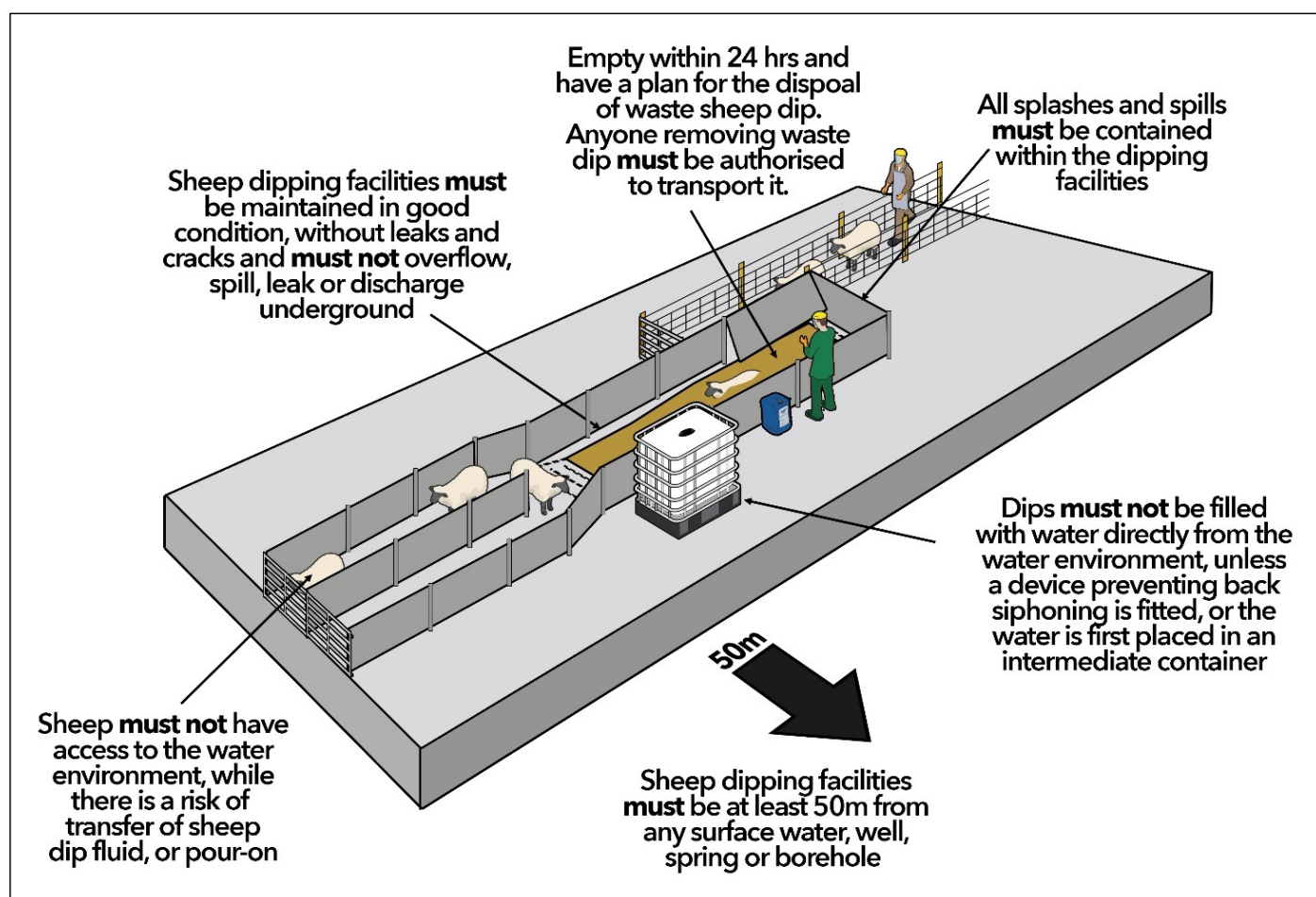


Figure 13.1. Example of sheep dipping and handling facilities

Those dipping sheep **must** hold or be under supervision of a holder of a Certificate of Competence in the Safe Use of Sheep Dip.

Location and maintenance of sheep dipping facilities

Sheep dipping and associated facilities can be varied and will be specific to each individual site (Figure 13.1).

Mobile units, any permanent dipping facilities built after 1st April 2008 and sheep handling facilities used for pour-on treatments constructed after 1st January 2018, **must** be sited at least

- 50m away from any surface water
- 50m away from any well, spring or borehole.

Sheep dipping facilities **must be**:

- maintained in good condition
- without leaks or cracks

Operating sheep dipping facilities and managing sheep after dipping

Sheep dipping facilities **must not** be filled with water taken from the water environment unless:

- a device preventing back siphoning is fitted to the system; or
- the water is first placed in an intermediate container

When sheep dipping facilities are in use:

- make sure that all splashes and spills are contained within the sheep dipping facilities

Once sheep dipping operations are complete:

- empty the dipper within 24hrs after dipping is finished
- have a plan for your waste sheep dip disposal by either having a licence from SEPA or confirming an alternative disposal route with an approved waste contractor
- ensure anyone removing waste sheep dip from site is suitably authorised to transport it

At all times:

- sheep **must** be prevented from having access to the water environment while there is a risk of transfer of sheep dip fluid or any pour on parasite treatment from their fleece
- the dipping facilities **must not** overflow, spill, leak or discharge underground including soakaways

Pour-on treatments

The chemicals used in pour-on treatments can still have a detrimental impact on the environment and as such sheep **must** be prevented from having access to any surface water or wetland while there is a risk of transfer any pour-on parasite treatment from their fleece.

Disposal of waste sheep dip

Where waste sheep dip is disposed of to land, you **must** hold a licence under the Controlled Activities Regulations (issued by SEPA) and you **must** adhere to the conditions contained within the licence. Alternatively, the waste dip can be securely stored until collected and disposed of by a licensed waste disposal contractor

Further guidance on obtaining an authorisation to dispose of waste sheep dip to land can be found on the **SEPA website**.

Definitions:

Groundwater – water below the surface off the ground in the saturation zone and in direct contact with ground or subsoil.

Sheep dip (for treatment of parasites) – liquids, containing chemicals which are authorised and marketed as veterinary medicines for the treatment of sheep ectoparasites, into which sheep are immersed and/or in which sheep are showered.

Sheep dip (for cosmetic reasons) – liquids, containing phenols, phenolic compounds and hydrocarbons which are authorised and marketed as cosmetic products for sheep, into which sheep are immersed and/or in which sheep are showered.

Pour-on treatments – a liquid, containing chemicals which are authorised and marketed as veterinary medicines for the treatment of sheep ectoparasites and worms, applied via drench gun onto the back of the sheep.

Water environment – all surface water, groundwater and wetlands.

FARMING & WATER SCOTLAND



Ditch clearing

Maintaining field drainage systems can help to keep your soil in good condition, reduce erosion and improve farm efficiency.

Maintenance of field drainage systems, including any work to remove sediments, vegetation or debris **from a field drain or completely man-made ditch** can be done at any time without contacting SEPA.

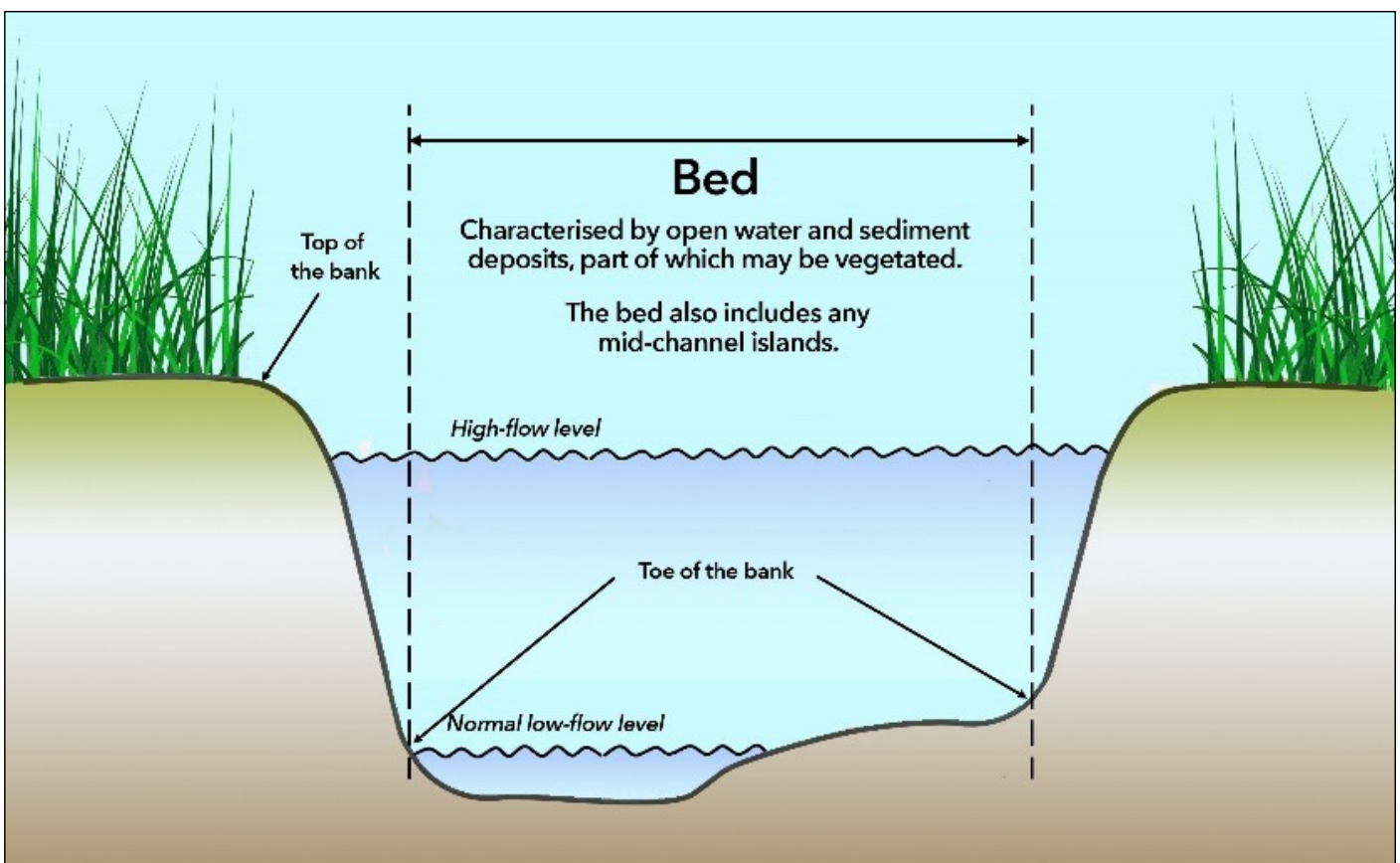


Figure 14.1. Watercourse/ditch features.

Sediment, vegetation or debris can be removed from any surface water that has been artificially straightened or canalised and has an average bed width of less than one metre.

Where carrying out such works you **must not**:

- increase the erosion risk to the bed or banks
- unnecessarily remove vegetation from the bank
- dispose of vegetation into the channel
- widen the channel or heighten the banks (Figure 14.1)
- undertake work within the channel during periods in which fish are likely to be spawning nor in the period between any such spawning and the subsequent emergence of the juvenile fish – May to September is usually the best time for such work to be carried out but you should check with your local fishery trust
- cause pollution of the water environment. Consider using mitigation measures (such as straw bales or silt fences) to trap sediments and to minimise silt pollution downstream. Work should be undertaken in a downstream direction
- create any steps or sudden changes in the level of the channel bed. The bed **must** be graded to achieve a consistent level

To remove sediment from any un-straightened river, burn or ditch, or if the channel is more than 1 metre wide you **must** contact SEPA to check the level of authorisation required before any work is carried out.

Definitions:

Bed Width – the straight-line distance that is between the opposite bank toes of a river burn or ditch, and which spans the bed of the river, burn or ditch, including any exposed bars and vegetated islands

Channel Width – the straight-line distance that is between opposite bank tops of a river, burn or ditch and which spans the bed of a river, burn or ditch, including any exposed bars and vegetated islands

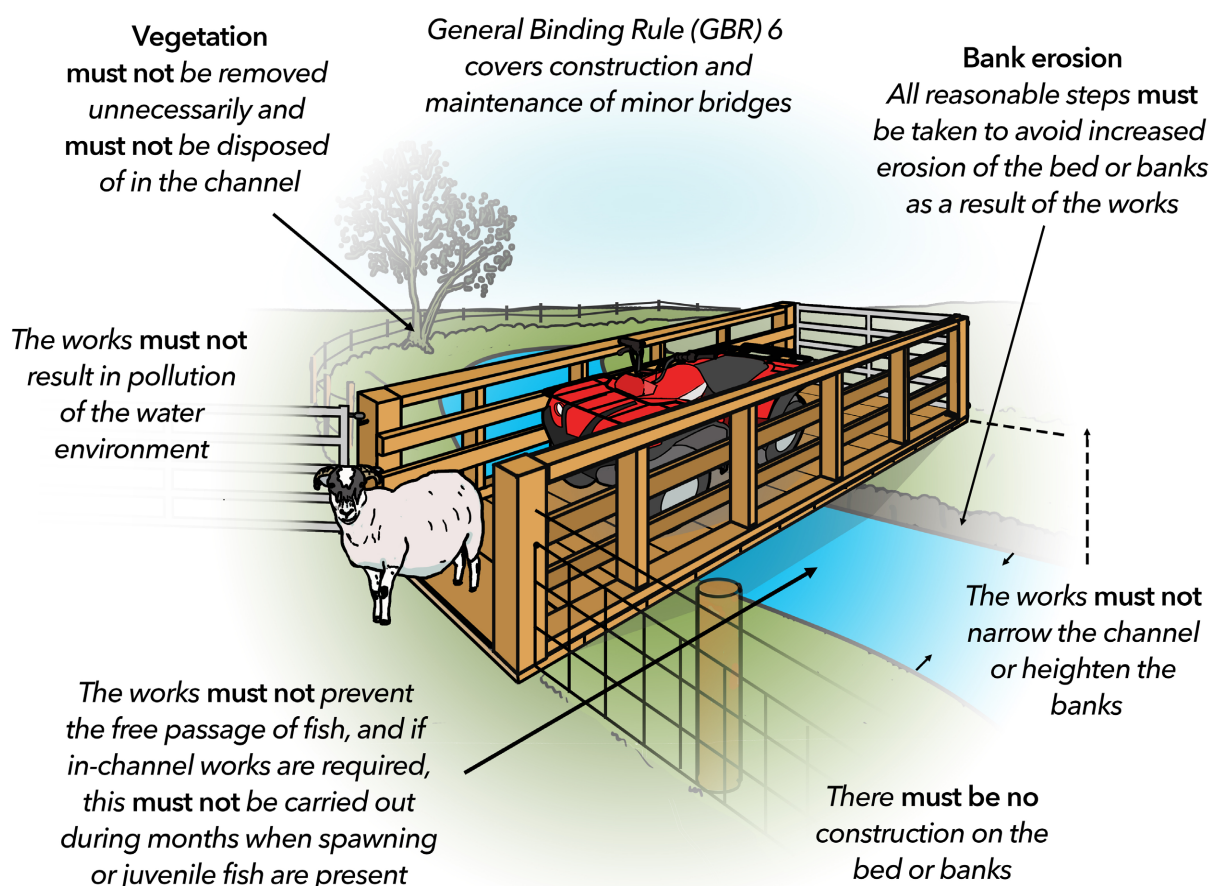
Minor watercourse – a watercourse not shown on the 1:50,000 scale Ordnance Survey maps (Landranger series).

FARMING & WATER SCOTLAND



Crossing points

Installing a suitable crossing point may help prevent livestock accessing a watercourse and so reduce the risk of poaching damage and loss of land through bankside erosion. A crossing can be installed across a minor watercourse without contacting SEPA.



Note: Unless you are on a minor watercourse, to install crossings that impact on the bed and/or banks of a watercourse you will need a registration or licence from SEPA.

Figure 15.1. Example of a minor bridge.

A **minor bridge** (Figure 15.1) can be installed across a **watercourse** without contacting SEPA. However, you **must not**:

- unnecessarily remove vegetation from the bank
- dispose of vegetation into the channel
- narrow the channel or heighten the banks
- prevent the free passage of fish
- undertake work within the channel during periods in which fish are likely to be spawning nor in the period between any such spawning and the subsequent emergence of the juvenile fish – May to September is usually the best time for such work to be carried out but you should check with your local fishery trust
- cause pollution of the water environment.

If necessary, a temporary culvert may be installed to facilitate the works, but the culvert **must not** extend more than 10 metres along the length of the river, burn or ditch and **must** be removed on completion of the works.

All reasonable steps **must** be taken to avoid increased erosion of the bed or banks as a result of the works.

To install any crossing point on anything not considered a minor watercourse or if your crossing cannot comply with GBR 6, you **must** contact SEPA to check to check the level of authorisation required before any work is carried out.

Definitions:

Minor watercourse – a watercourse not shown on the 1:50,000 scale Ordnance Survey maps (Landranger series).

Minor bridge – a bridge having no part of its structure within the channel of a river, burn or ditch and constructed for the purpose of supporting a single-track road

Water Environment – all surface water, groundwater and wetlands



Maintenance of structures and equipment

Regular, scheduled maintenance of structures and equipment not only improves efficiency, reduces excessive wear and tear, saves money, and avoids unnecessary delays, but it is also a regulatory requirement which will prevent pollution.

Outlined below are the basic regulatory requirements for structures and equipment. It is highly recommended that you audit your farms maintenance requirements to reduce downtime and stay on the right side of the regulations. All maintenance and equipment should be undertaken by personnel who are suitably experienced or qualified to undertake such activities.

Equipment for the application of fertilisers and manures

Spreading equipment **must** be kept maintained in a good state of repair. Regular maintenance will allow for more accurate application of manures and slurries, resulting in the ability to comply with the requirements of the diffuse pollution general binding rules.

For more information on the rules relating to application of fertilisers and manures refer to the Know the Rules Factsheet 8.

Sheep dipping facilities

Equipment which is used infrequently and/or left in situ in remote locations on a farm can be prone to neglect and disrepair. Sheep dipping facilities are used for short periods of the year, but it is essential that such equipment is checked on a regular basis. Checking these facilities can allow for defects to be fixed and resolved well before the requirement to use them. All sheep dipping facilities must be maintained in good condition and there should be no leaks or cracks.

More information on sheep dipping facilities and the safe and proper use can be found in Know the Rules Factsheet 13.

Slurry and liquid digestate storage systems

Slurry and liquid digestate storage systems are a significant investment on the farm. These structures need to deal with liquids under pressure, diverse weather conditions and regular use.

All structures used to store these **must** be maintained to ensure they are kept free from any structural defects. All storage systems **must** be fit for purpose and meet a minimum level of structural integrity, the slurry storage tank, channels, pipes, valves, and reception pit **must** be operationally maintained to be free of any structural defects during their lifecycle.

More information on the maintenance requirements and other requirements relating to pollution control and prevention associated with slurry stores can be found in Know the Rules Factsheet 2.

Silage structures

It is important to carry out routine inspections and annual maintenance checks on your clamps and collection systems to ensure they remain impermeable and free from any structural defects. The best time to carry out these checks is when the clamp is empty before first cut silage is taken.

The silo, its effluent tank, channel, and pipes **must** be operationally maintained to be free of any structural defects during its lifecycle. Further information on the maintenance requirements and operation requirements of silage structures can be found in Know the Rules Factsheet 4.

Surface water drains and associated structures

All facilities with which the surface water drainage system is equipped to avoid pollution, including oil interceptors, silt traps and SUD system attenuation, settlement, and treatment facilities, must be maintained in good order and repair.

Pesticide sprayers

Pesticide sprayers and other devices used to apply pesticides **must** be maintained in a good state of repair, such that there is no leakage of pesticide from any part of the equipment and the sprayer is calibrated to accurately deliver the required application rate. These items of equipment can often lay dormant on a farm or store for significant periods of time. Prior checking, well in advance of use is essential to ensure any repairs can be made in time for its essential use.

For more information on pesticide management can be found in Know the Rules Factsheet 12.

FARMING & WATER SCOTLAND



Liquid Anaerobic Digestate Storage

Liquid digestate can be a valuable source of nutrients on the farm but it needs to be handled and managed carefully to ensure no pollution occurs.

NOTE: Where the storage of liquid digestate is controlled by a specific authorisation under waste legislation or the Pollution, Prevention and Control regulations you must follow the conditions within that specific authorisation.

Farms which produce and /or store liquid anaerobic digestate (AD) on farm **must** have adequate storage facilities and management in place (Figure 17.1).

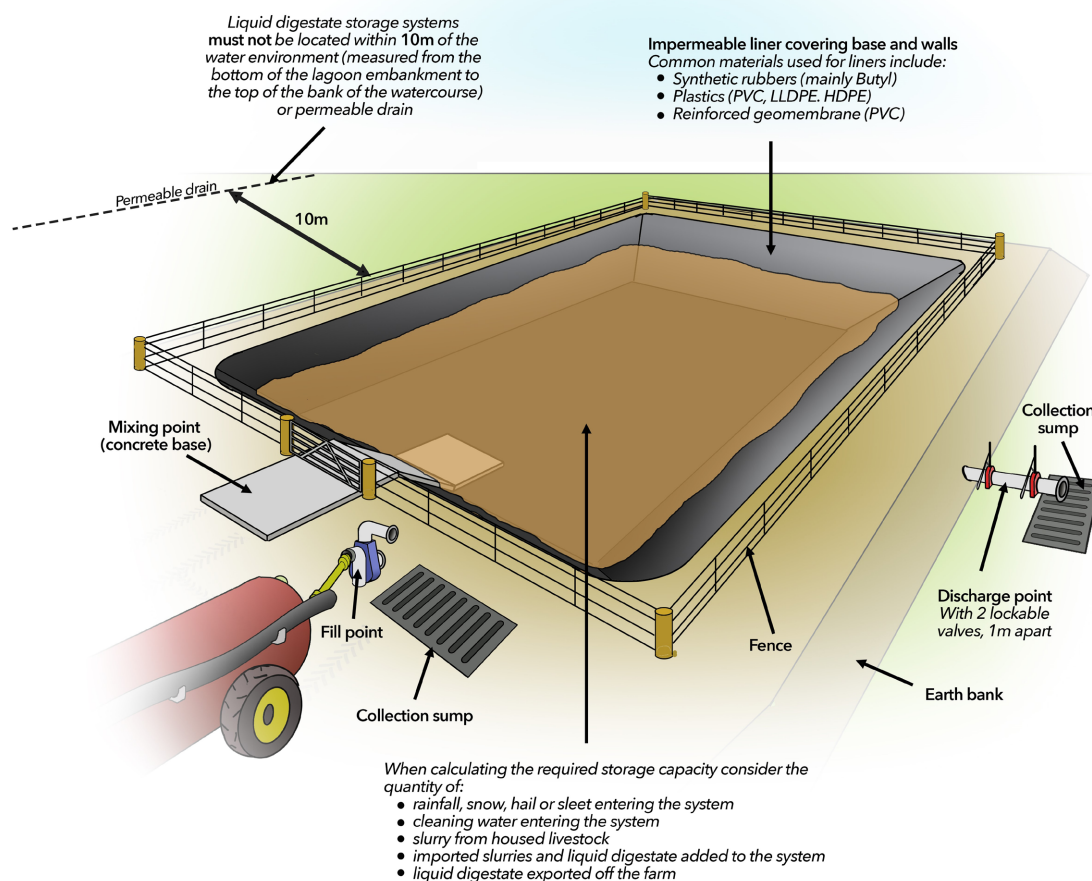


Figure 17.1 Anaerobic digestate storage lagoon.

Liquid anaerobic digestate storage capacity

The liquid AD storage facilities **must** have sufficient capacity to store the total quantity of liquid AD produced or imported onto the farm during periods when application to land would not comply with regulatory requirements. This involves taking into account crop requirement for nutrients and land conditions as required by the Controlled Activities Regulations and where relevant, the NVZ Action programme – see also the Know the Rules Factsheet 8: Organic Fertiliser Application.

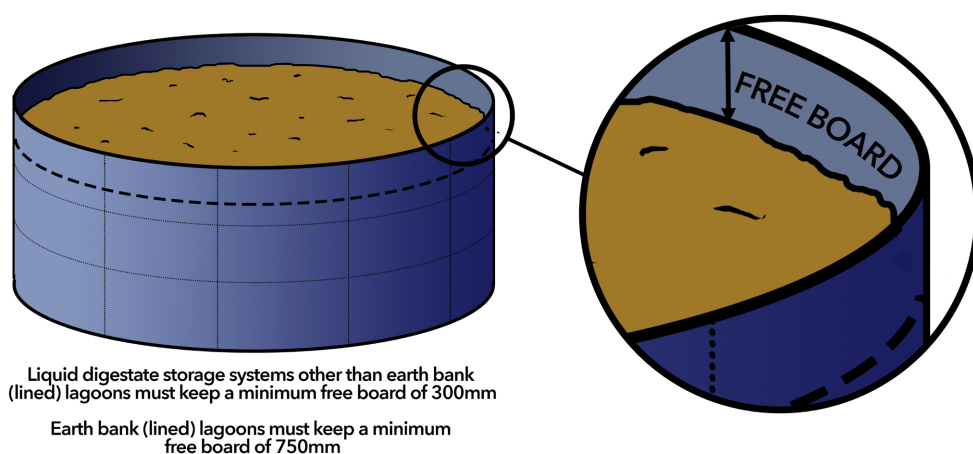
When calculating minimum storage capacity you **must** also include any rainfall entering the system as well as any other farm materials that may enter the system including drainage from middens, dirty yards or silage pits, any dairy or parlour washings and any other imports or exports of liquid AD.

All farms must comply with the minimum storage capacity requirement by 1 January 2024.

Liquid anaerobic digestate storage systems

All structures and storage systems used to store liquid AD **must**:

- be maintained to ensure they are kept free from any structural defects.
- be fit for purpose and meet a minimum level of structural integrity such that;
 - the base and walls of the liquid digestate storage tank and the walls of any feedstock tank, channels and pipes **must** be impermeable.
 - where the liquid AD storage tank is fitted with a drainage pipe, there are 2 valves fitted in series that are kept locked shut when not in use
 - earth bank lined lagoons maintain a minimum freeboard of 750mm and all other liquid AD tanks maintain a minimum freeboard of 300mm (Figure 17.2).



17.2 AD storage freeboard requirement.

Existing liquid AD storage systems must meet the above and the relevant British Construction Standards by January 2024

New/altered liquid AD storage systems

If you are planning to install a new liquid AD storage system or substantially reconstruct or enlarge any existing system you must:

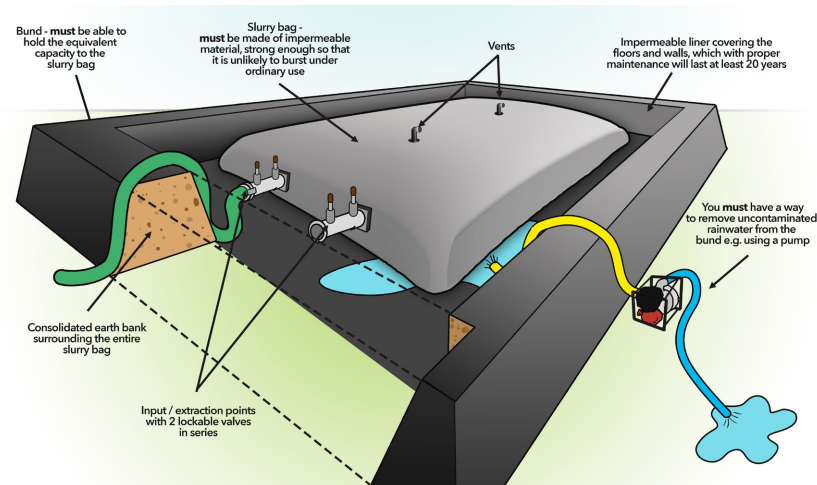
- consult with a suitably qualified engineer and have an engineering plan available for the proposed works.
- notify and provide SEPA with the engineering plan at least 30 days prior to any work starting.
- retain the engineers final sign-off certificate for the works for the life of the structure.

Any liquid AD storage system constructed or substantially reconstructed or enlarged after 1 January 2022 must:

- have a life expectancy of at least 20 years with proper maintenance, and
- where the walls are made of earth be lined with an impermeable sheet material with a design life of 20 years with proper maintenance.
- be situated at least 10 metres from any surface water or surface water drain.

Slurry bags

Where liquid AD is stored in a slurry bag it **must** be constructed of impermeable material of sufficient strength and integrity to ensure it does not burst or leak (Figure 17.3).



*Figure 17.3.
Earth banked
slurry bag.*

The slurry bag **must** be situated within a bund that:

- has a capacity of at least equivalent to that of the slurry bag
- is lined with an impermeable sheet material with a life expectancy of 20 years with maintenance
- has a mechanism to remove rainwater from the bund
- is not penetrated by any valve pipe or other opening other than as necessary to remove rainwater.

Definitions:

Freeboard – the distance from the level of the slurry to the top of the storage structure.

Impermeable sheet material – means:

- synthetic rubbers, EPDM (ethylene propylene diene monomer rubber) and butyl,
- plastics, including polyvinyl chloride, low density polyethylene and high-density polyethylene, and
- reinforced geomembranes

Liquid digestate – whole digestate, the liquid fraction, or any run-off from the storage of fibrous residue, resulting from an anaerobic digestion process of a consistency that allows it to be pumped or discharged by gravity at any stage in the handling process.

Liquid digestate storage system – a liquid digestate tank, any feedstock tank used in connection with the liquid digestate tank, and any channels and pipes used in connection with the liquid digestate tank or feedstock tank.

Liquid digestate tank – includes a lagoon or tower used for the storage of liquid digestate.

Slurry – excreta, including any liquid fraction, produced by livestock whilst in a yard or building. This includes any mixtures of excreta with bedding, feed residues, rainwater and washings from dungsteads, middens and any buildings or yards used by livestock.

Surface water – all standing or flowing water on the surface of the land, transitional water and coastal water.