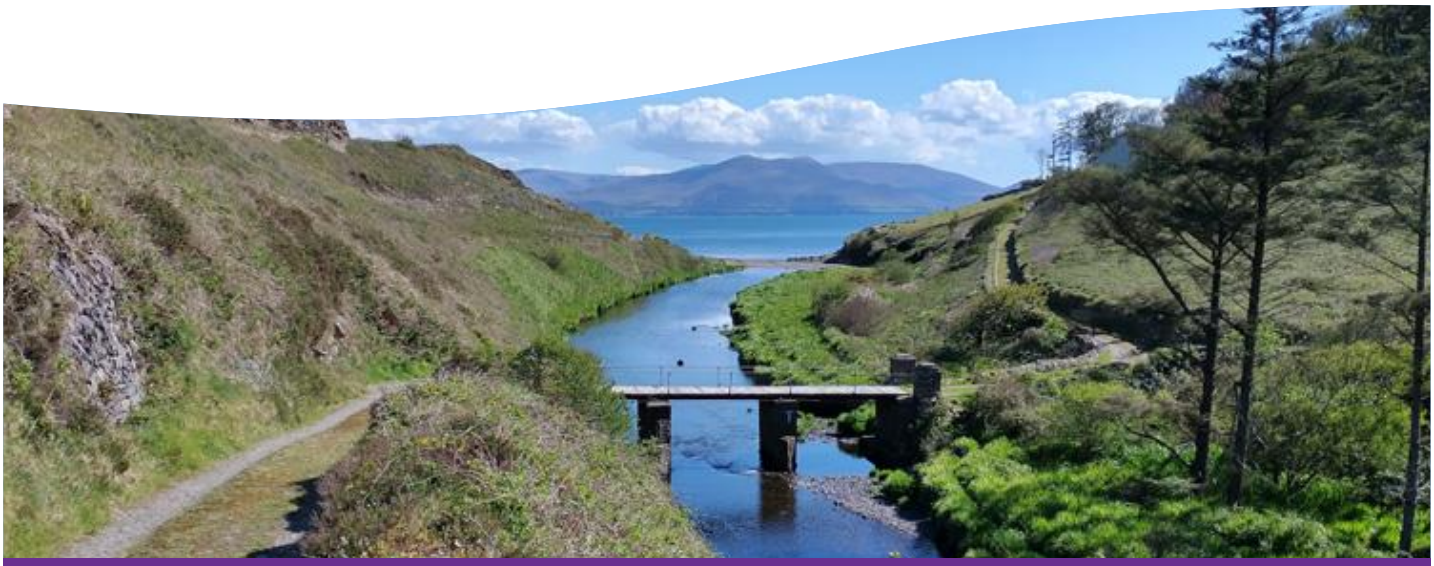
Waters of LIFE



Pilot Agri Environmental Programme

Supporting Actions Specifications

August 2025

An Roinn Tithíochta, Rialtais Áitiúil agus Oidhreachta
Department of Housing, Local Government and Heritage

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1. Introduction

Waters of LIFE is a pilot results-based agri-environment programme that rewards farmers for the environmental services provided by their land and for taking actions to address issues of concern for stream ecosystem health.

Water flowing across farmyards and farmland can gather and carry pollutants, such as sediment, nutrients, pathogens (e.g., *E. coli*) and agrichemicals (e.g., pesticides). Therefore, funding for supporting actions is available to complement the "Runoff Risk Assessment" and scorecard results, which help farmers identify suitable locations for mitigation measures on their farm. Supporting Actions are voluntary measures that a farmer may choose to undertake. This document sets out the Supporting Actions that are available to farmers within the Programme.

Approval and Installation of Supporting Actions

The Runoff Risk Assessment and scorecard(s) can result in proposed supporting actions, which are submitted to the project team for approval by the advisor via the online mapping system. Supporting actions details should include the location and quantity of the works proposed. In the case of bespoke measures, a costing should be included. It is important that the landowner (and their advisor) engage with the project team to scope the details and costs associated with bespoke measures. Once received by the project team, the proposed supporting actions will be screened and approved if they are assessed as being appropriate and they align with the relevant specification.

No supporting action associated works should be undertaken prior to receipt of the Farm Work Plan from the Waters of LIFE project team. Upon receipt of the Farm Works Plan, the farmer can proceed with the works and submit a payment claim following completion. The submission for payment should comprise of a declaration that works have been completed in accordance with the Farm Works Plan, with all relevant supporting documentation together (e.g., receipt as proof of purchase, geo-tagged photograph, etc.). The documentation required varies by Action, and can be seen in Table 1, as well as in the specification of each individual action listed in this document. This declaration can be made by the farmer using a mobile application developed for the programme. The Waters of LIFE team will visit a proportion of farms to verify the works are completed in line with programme specifications.

A list of standard Supporting Actions is presented in Table 1. There are several actions that due to their variable nature and site-specific conditions, will need to be costed individually in consultation with the project team. These measures will be costed based on standard rates for labour, machinery, and materials as published by DAFM schemes, such as TAMS.

There are six categories of Supporting Actions as follows;

1) Farm Infrastructure
2) Green Infrastructure (Nature Based Solutions)
3) Water Crossing
4) Water Provision
5) Other

Integrating multiple actions to address specific issues (e.g., multiple actions along a flow pathway to improve each solution's effectiveness) is highly recommended to achieve a positive result.

The list of actions presented here is not exhaustive and it is foreseen that additional actions may be co-funded by the Programme. As individual farmers or groups of farmers may have innovative ideas for appropriate actions, participants and their advisors are encouraged to discuss these with Waters of LIFE team. Such bespoke actions would be costed individually in consultation with the project team. The actions and associated costings presented below may be revised throughout the programme.

General Requirements

1. All supporting actions are subject to screening for environmental impacts and appropriateness prior to approval by the Waters of LIFE team and no funded actions can be carried out until Waters of LIFE approval has been received.
2. All supporting actions must be retained for the duration of the project for the purpose they were funded, unless otherwise agreed with the Waters of LIFE team.
3. Where an investment/supporting action has been grant aided under TAMS or any other National/EU funded agri-environment or capital investment Scheme from 01 January 2018, it cannot receive additional funding under the Waters of LIFE. However, if the implementation of any action improves habitat scores over the course of the Waters of LIFE programme, this could contribute to higher annual payments.
4. Some actions may not be funded within certain scored plots see Table 1.
5. The person undertaking certain actions will need to be identified and will require relevant Waters of LIFE training (See Table 1).
6. Advance notice of the expected date of commencement of certain supporting measures must be given to the Waters of LIFE team (See Table 1).
7. Archaeological features must not be impacted by supporting actions.
8. A supporting action must not impact on SAC/SPAs, NHAs, pNHAs and Annex 1 Grasslands, or any other sensitive habitats. Any application for a supporting action will be subject to Appropriate Assessment and the relevant restrictions set out in Appendix I.

Table 1: List of Supporting Actions and Payment Rates

Ref	Action Name	Min	Max	Unit	Payment Rate
Farm Infrastructure					
01	Permanent Single Strand Electric	5	2000	m	€2.77
02	Sheep Fence	5	2000	m	€6.75
03	Sheep Fence Mountain Rate	5	2000	m	€11.25
04	Barb Wire Fence	5	2000	m	€4.50
05	Deer Fence	5	2000	m	€22.50
06	Solar Powered Electric Fencer	1	2	unit	€634
07	Gateway Measures	1	10	unit	€360
Pathway Interception Measures					
08	Waters Bars	1	10	unit	€213
09	Vegetated Bunded Drain	1	3	unit/yr	€1000
10	Earth Bund	1	5	25mx0.5m	€300
11	Sediment Trap	1	3	unit/yr	€120
12A	Hedgerow Establishment- with earth bund	10	250	m	€24.37
12B	Hedgerow Establishment – without earth bund	10	250	m	€21.17
13	Grassland Buffer Cross-slope	10	100	m	€5.45
14A	Spatially Targeted Riparian Buffer 0.01-0.04ha	1	5	unit	€400 / €228*
14B	Spatially Targeted Riparian Buffer 0.05-0.1ha	1	5	unit	€915/€418*
14C	Spatially Targeted Riparian buffer 0.11 to 0.2ha	1	5	unit	€1,656/787*
15	Tree Planting	5	100	whip	€16
16	Willow Beds	30	200	m	€34
17	Small Scale Wetland Pond	1	3	unit	€800 / €627
Watercourse Crossing					
18	Culvert	1	5	unit	€500
19	River, Stream Crossing/Bridge	1	1	50% of cost	Max €5000
Water Provision					
20	Solar Pump	1	2	unit	€2500
21	Water Storage Tank	1	2	unit	€400
22	Pasture Pump	1	5	unit	€400
23	Water Trough	1	5	unit	€300
24	Water supply piping and fittings	1	n/a	unit	€150
Invasive Species					
25	Non Native Invasive Species	Case by case basis			
26	Conifer Removal	Case by case basis			
Other Supporting Actions					
27	Water Table Management on Peat soils	Direct payment by project			
28	Green Hay	1	5	ha	€250
29	Contractor Mobilisation Fee	1	1	applicant	€200
30	Bespoke Measures	Case by case basis			
31	Host Farmer Payment	1	5	event	€180

*Reduced payment rate for ACRES

2. Farm Infrastructure Actions

A1, A2, A3, A4, A5 Fencing

Fenced off water bodies (such as rivers, streams, drains, ponds, and lakes) can be used to prevent access by bovine and ovine livestock. This will help reduce the impacts of nutrient and sediment enrichment, as well as prevent bank destabilisation. This measure can also be used to increase the width of a riverside habitat. This measure should only be recommended when it is expected to provide a significant benefit to water quality.

Requirements

1. Where the purpose is to exclude livestock from a watercourse, only applicable where grassland stocking rate <170kgN/ha.
2. Where permanent fencing is being replaced to increase the width of the riverside buffer, the resulting riverside buffer must be at least 2 m wider than the pre-existing riverside buffer.
3. To be eligible for this action, the minimum continuous length to be delivered is 5 m.
4. Remove all old fencing material before putting up the new fencing.
5. It is not permitted to use fencing options to divide an existing field into two or more parts.
6. All fences must be fit for purpose and the range of animals it is intended to exclude. The wire must be strained tightly between posts and use enough strands to control the livestock. It is recommended to follow the DAFM Minimum Specification for farm fencing S148 & Accepted Fencing Post Suppliers Specification S148A.
7. Fencing posts must consist of timber or alternative metal/PVC posts, it is not permitted to attach wire fencing directly to trees, use of pigtails or temporary posts not allowed.
8. Sheep fence requires sheep mesh topped with a single strand of wire. The lowest line of the sheep wire mesh must be 100mm above ground level to allow adequate clearance for wildlife.
9. The deer fencing option is available in the Avonmore and Graney demonstration catchments only.
10. Extensive removal of existing vegetation to facilitate fencing is contrary to the objective of this measure and therefore cannot be allowed within the Project.
11. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

A1 Permanent single strand electric fence: €2.77/m.

A2 Sheep mesh and 1 strand of wire: €6.75/m.

A3 Sheep mesh and 1 strand of wire: €11.25 (mountain rate).

A4 Barbed wire fence: €4.50.

A5 Deer fence: €22.50.

Validation:

A geotagged photograph must be submitted through the Waters of LIFE App, along with invoices/receipts for cost.

A6 Solar Powered Electric Fencer

If a mains-powered electric fence supply is unavailable, farmers may apply to the Water EIP for a solar-powered electric fencer. These provide a flexible and cost-effective solution for powering long sections of electric fencing. To be eligible for payment, applications must be made in conjunction with other relevant fencing measures.

Requirements

1. Fence must be purchased new with certification to ensure that the product conforms with health, safety, and environmental protection standards.
2. The initial location of the temporary electric fence must be identified and marked on the map.
3. The minimum standard is 0.4 Joule of stored energy.
4. The size of the solar-powered electric fencer should be based on the length of the fence to be electrified.
5. Once purchased, the unit must be retained for the remainder of the Waters of LIFE contract.
6. Where a Solar Electric Fence Unit has been grant aided under TAMS or any other National/EU funded Agri-environment or Capital investment Scheme from 01 January 2018, no further funding will be provided by Waters of LIFE.
7. To ensure adequate operation they should not be placed in the shade.
8. Must not be used for any other purpose.
9. Must indicate where it will be stored while not in use.
10. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

Applicant will receive up to €634 for a solar powered electric fencer. Min. 1, Max 2.

Validation:
A geotagged photograph must be submitted through the Waters of LIFE App, along with invoices/receipts for cost and details of storage location when not in use.

A7 Gateway Measures

Gateways located close to surface water can deliver sediment and pollutants to these areas, particularly frequently used gateways. Redesigning the paddock or the gateway can have a positive impact on water quality. Gates may also be used to provide access to wide (>5m) riverside habitats for maintenance.

Requirements
1. Re-route the existing trackways associated with the old gateway and make good the disused sections.
2. Use new hanging and shutting posts in the new gateway.
3. Block up the old gateway using materials that match the character of the rest of the boundary.
4. Temporary storage of stone or excavated material must be suitably located away from any watercourse or drain.
5. All new gateways crossing surface water must be at least 5m from the edge of the water.
6. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:
€360 /unit.

Validation:
A geotagged photograph must be submitted through the Waters of LIFE App, along with invoices/receipts for cost.

A8 Water Bars

Runoff from impermeable surfaces such as farm roadways must be managed to prevent flows into rivers and streams. Retrofitting water bars on existing farm roadways can mitigate runoff pathways by diverting water onto areas of higher permeability such as fields and verges or into sediment traps. Cross drains typically sit below the surface of the road, where as water bars sit above the surface.

Requirements
1. Water bars cannot direct run-off directly into anything that can convey water, surface drains, streams, watercourses, etc.
2. Use crushed stone/pencil, or reinforced concrete bars to create a smooth durable structure to direct water off the roadway.

3. Extend the ramp into the adjoining field to prevent run-off from entering back onto the roadway.
4. Structure must be fit for purpose.
5. Place the ramp at a slight angle (guidance 30 degrees) to the direction of the roadway to help divert run-off off the roadway.
6. If using crushed stone/pencil, compact it well.
7. If using crushed stone/pencil to create ramps, construct ideally in winter months when the road is in less use to allow for time to settle.
8. In longer stretches of roadway more than one water bar may be necessary.
9. For high-traffic areas a low and wide ramp is recommended. A minimum height of 15 cm and a width of 1 m may suit these locations.
10. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

€213/unit.

Validation:

A geotagged photograph must be submitted through the Waters of LIFE App.

3. Nature Based Solutions

Nature-based solutions describe the development and use of nature and natural processes to address diverse environmental and other sustainability issues.

A9 Vegetated Bunded Drain

Ditches/drains represent a major pathway for the transport of water, sediment, and nutrients from the fields to receiving watercourses. There are opportunities to reduce the impact of these pathways by increasing sedimentation settlement processes and encouraging the growth of plants within the ditch/drain. Vegetated Bunded Drains help to maximise the retention of sediments and nutrients within ditches/drains and to create opportunities for infiltration of water into soils.

Requirements

1. Vegetated bunded drains are not suitable for streams or other permanent watercourses, or drains with a gravel bed. Inlands Fisheries Ireland (IFI) consider these drains as having potential for fish life. If in doubt, check with the Waters of LIFE project team.
2. This measure is not suitable in hilly areas where there is a high risk of flash flooding or in drains with high flow volumes.
3. Not suitable in free-draining areas unless the floor is sealed with impermeable clay.
4. A suitable ditch or drain, dry or wet must have a slope of less than 5%.
5. The best time to carry out work on farm drains is between July and September to avoid any unnecessary soil damage, sediment loss or disturbance to wildlife. Also bear in mind bird nesting season restrictions.
6. A sediment plug e.g. bale of straw/rushes, should be inserted downstream of the works during the construction phase to capture any sediment that becomes mobilised as result of the installation works.
7. Where suitable, excavate material from the base of the drain to create a sump within the drain approx. 60 cm (2 ft) deep. Use this material to create a bund downslope from the sump. Where no sump is created, the earth used to create the bund must be sourced from within the farm. If possible, the bund should be at least 90 cm (3 ft) wide. Ideally, widen the channel just up-slope from the bund to at least twice the original width. The slope of the bank should be re-profiled if the bank is steep.
8. The bunds cannot be used as a crossing point for livestock or machinery.
9. The number of bunds required will be site specific. The distance between bunds is dependent on the slope of the drain.
10. Introduce native wetland plants (Appendix II) from elsewhere on the farm or from a specialist supplier. Plant these at the waterline.

11. Removal of sediment & associated phosphorous should take place as necessary. Ongoing management is required to avoid these drains becoming sources of nutrients, rather than sinks.
12. Permission required prior to any work if within or close to any protected area, Natura 2000 site or Archaeological site.
13. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

€1,000 per vegetated bunded drain. Min length: 20 m. Max length: 50 m.

Validation:

A geotagged photograph must be submitted through the Waters of LIFE App.

A10 Earth Bund

An earthen bund (bank) when properly positioned to intercept overland flow pathways, can temporarily pond field runoff water and sediments, targeting surface runoff or diverting clean rainwater away from farmyards. These features can trap significant amounts of sediment, including valuable topsoil. Unlike more permanent wetlands, earthen bunds have minimal impact on farming productivity, as they drain quickly after a storm.

Requirements

1. Earthen Bunds will be paid on a per unit basis (1 unit = 25 m long x 0.5 m high) & the min length of a unit is 15 m.
2. Where the applicant is applying for two adjoining units, the minimum required length is 40 m (25 m plus 15 m) to receive payment for both units. This applies similarly for subsequent bunds when they are joined together.
3. To ensure structural integrity the base of the bund should be 1.2 m wide at ground level and 0.5 m wide at the crest. Allow an extra 25% material for settlement of soil.
4. This measure is not suitable on known floodplains or within 20 m of EPA river line.
5. Ensure suitable compaction during the formation of the bank.
6. Typically, but not mandatory, a pipe is placed through the bund to aid with draining. The pipe can be raised to allow some water retention for longer periods (which allows more sediment to settle and can increase recharge into the ground).
7. The bank side slope gradient should be as shallow as possible to fit into the landscape, especially on the downslope side which could be eroded if it overtops.

8. The vegetated sods (turves) should be removed and left aside prior to construction and then replace on the earth bund to allow re-vegetation as soon as possible.
9. To be constructed from soil sourced on the farm, usually taken from directly up-slope of the earth bund.
10. Recommended to remove any silt/sediment that builds up over time.
11. Recommended if grass sods are not sufficient to cover the bund, to sow grass seed on the exposed earth surface to reduce the likelihood of erosion.
12. Permission is required prior to any work if within or close to any protected area, Natura 2000 site or Archaeological site.
13. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:
€300/unit.

Validation:
A geotagged photograph must be submitted through the Waters of LIFE App.

A11 Sediment trap

A sediment trap is a shallow basin with a slight slope on its base. It is typically used to intercept runoff from farm roadways travelled by livestock or machinery, allowing sediment or heavier materials to settle before being discharged to grassland, away from watercourses. The size of the sediment trap can vary depending on the estimated volume of runoff from the farm road that needs to be contained for enough time to allow sediment to settle out of suspension

Requirements
1. Site sediment traps in areas where there is a risk of sediment runoff into surface water.
2. The outlet from sediment traps cannot be directly connected to the drainage/river network. The outflow must be overland to maximise potential infiltration/settling.
3. Siting of sediment traps will need to account for the risk to groundwater. In such cases, keep the base of the sediment trap as high in the ground as possible, while still providing sufficient storage depth to catch and hold water. Any soil used to seal the base of the sediment trap must be sourced from within the farm gate.
4. As a guideline the sediment trap should be 10-20% of the runoff area. Design and sizing of the sediment traps will be site specific. Suggested dimensions (internal base area) 4 m x 10 m x 1 m deep, with the inlet and outlet at opposite ends to maximise the flow-path through the basin. Works should be undertaken during the growing season & dry weather.

5. Remove sediment build-up in chambers as needed and do not spread contents within 20 m of surface water.
6. Create gently sloping banks (guidance 10 degrees) using soil from excavation to promote vegetation.
7. Fencing of sediment traps, where required, can be applied for separately under Action 1. Allow access points for management.
8. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:
€120/unit/year.

Validation:
A geotagged photograph must be submitted through the Waters of LIFE App.

A12 Hedgerow Establishment (Cross Slope on Earth Bund)

Hedgerows are very effective in reducing the risk of land-spread material moving over sloped ground during heavy weather or cloud bursts, if planted across the slope in an overland flow pathway. The earthen mound increases water interception and storage at the base of the hedge.

Advisors should recommend this measure in the dominant flow pathways, i.e. the high and very high flow pathways as indicated on the EPA PIP P Flow Pathway Maps and verified by an advisor and farmer on the ground. The earthen mound should be sufficiently long to intercept and slow the overland flow. Be mindful when applying for this measure that the flow won't be diverted elsewhere to create a new flow pathway.

Requirements
1. This measure cannot be located within an ACRES area-based action to avoid dual funding risks.
2. Identify and agree on locations in collaboration with the farmer, using tools such as the EPA PIP Maps, particularly on sloped ground or in areas like large open fields where significant overland flow occurs during wet weather.
3. Determine the most suitable native hedgerow species for the area by observing which species are thriving locally. For example, whitethorn and holly do not tolerate very wet soils, and whitethorn is not well-suited for high elevations. Blackthorn, in contrast, thrives better in heavy soils and on coastal, exposed sites. A list of native hedgerow species is given in Appendix III.
4. Plants must be of Irish Origin or Irish Provenance and purchased from DAFM registered professional operators. All plants must have accompanying plant passports.
5. To establish a mound, furrow or break the ground to loosen the soil, then build a low earthen mound at the base. The height of the mound will vary depending

on the location, but it should generally be around 0.3 m high (with heights over 0.15 m still offering benefits), 1 m wide at the base, and 0.4 m wide at the crest. The slope of the bank should be as shallow as possible to blend into the landscape, especially on the downslope side, which could be prone to erosion if overtopped. Allow an additional 25% of material to account for soil settlement. Ensure proper compaction during the formation of the bank. Position the hedge just off the crest of the bank on the downslope side to prevent the trees from drying out. (Source: The Natural Flood Management Manual).

6. Plant whips in a double staggered row, 1ft between the whips and 1 ft between the rows (minimum 5 plants p/m).
7. The use of pesticides or herbicides is not permitted within 1.5 m of the hedge after planting, although spot treatment of noxious weeds is allowed. Biodegradable plastic can be used to suppress grass growth. If rabbits are an issue, consider using tree guards (preferably biodegradable) or a low electric fence for protection.
8. Failed or dead plants must be replaced during the following planting season.
9. The applicant must have control of and access to both sides of the new hedgerow to ensure proper maintenance.
10. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

€24.37/m (max length 250 m).

Validation:

A geotagged photograph must be submitted through the Waters of LIFE App, along with invoices/receipts for hedging plants.

A13 Grassland Buffer Cross-slope

Unfertilized mature grassland strips can help protect water quality from nutrient and sediment run-off by creating buffers that intercept nutrients and sediment. A grassland flow buffer is ideally placed along an existing wire fence further up a slope from surface waters in an area prone to runoff and erosion.

Requirements

1. This measure cannot be located within an ACRES area-based action to avoid dual funding risks.

1. This action is not suitable on species-rich grassland.
2. A grass strip should be located to intercept a flow pathway.
3. Chemical or organic fertiliser or lime is not permitted to be applied in the field margin.
4. A grass strip should be 3 m wide and a minimum continuous length of 10 m.

5. These areas must be fully vegetated with typical grassland species. No existing scrub or trees should be removed to create these areas.
6. These areas cannot be used as farm tracks and must not be located beside an existing adequately functioning buffer (hedgerow, earth mound etc.).
7. A grass strip should be stock-proof, with an access point for management. Permanent fencing measures can be applied for on one side only under Action 1.
8. Pesticides and herbicides are not permitted to be applied, except for the spot treatment of noxious/invasive weeds. In the second year after the grass buffer is created, you must cut the buffer between September and December. Alternatively, buffers may be managed by grazing, but this can only take place during the month of September and ensure that no poaching occurs.
9. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:
€5.45/m.

Validation:
A geotagged photograph must be submitted through the Waters of LIFE App.

A14 Spatially targeted riparian buffer zones

A spatially targeted riparian buffer zone is an area left uncultivated at flow delivery points adjoining surface water. They help to intercept sediment and nutrients from soil surfaces after they have been mobilised. These buffers are suited for mitigating overland flow pathways with point discharge to the drainage network, rather than sheet flow discharge. Linear riparian buffers are more suited to mitigating sheet flow discharges to the drainage network. Linear riparian buffers of up to 20 m can be installed and will be scored and paid for using the Riverside Habitat Scorecard. Spatially targeted buffers will be of various shapes and sizes. The sizing of the buffers will need to take into account the size of the flow pathway relative to the contributing upslope area.

It should be noted that adequate source control measures must be implemented on each farm to avoid riparian buffers becoming overloaded with nutrients. Riparian buffers are part of a wider catchment management plan to reduce overall loads.

The advisor will use the Runoff Risk Assessment tool (and the accompanying datasets) to identify focused flow delivery zones and points. These will need to be validated at the field scale. This process helps pinpoint pathways and areas in the landscape with the highest risk of phosphorous and sediment loss to water bodies.

There are three size options available: 0.01 ha - 0.04 ha, 0.05 ha - 0.1 ha, 0.11 ha - 0.2 ha.

Requirements

1. This measure can be sited within ACRES Low Input Permanent Pasture, Extensively Grazed Parcels and/or Management of Intensive Grassland next to a Watercourse at the reduced rates outlined below.
2. No organic/inorganic manures or lime are allowed in the spatially targeted riparian buffer zone.
3. No grazing allowed within the spatially targeted riparian buffer zone.
4. Grassland spatially targeted riparian buffer zones must be fenced off. Tillage buffer zones can be unfenced where no livestock are present.
5. It is strongly recommended to plant Spatially Targeted Buffer areas with native trees in conjunction with the tree planting measure. Additional funding is available to support this planting under Action 15.
6. Spatially Targeted Riparian Buffer Zones are irregular shapes and are site-specific. The shape & size of a spatially targeted buffer will be dictated by the overland flow pathway as per the EPA PIP maps, or seen on the ground.
7. Where required, maintenance of spatially targeted buffer zones should be carried out to ensure that they continue to function effectively. This may require periodic cutting/strimming and removal of vegetation as required (observe all legal requirements). Leave a gap handle or install a suitable gate to allow access for maintenance. Where gate access is required, this can be funded under Action 7.
8. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

A. Spatially targeted riparian buffer zones: 0.01 ha - 0.04 ha. €400/unit (ACRES Reduced Rate: €228/unit).

B. Spatially targeted riparian buffer zones: 0.05 ha - 0.1 ha. €915/unit (ACRES Reduced Rate: €481/unit).

C. Spatially targeted riparian buffer zones: 0.11 ha - 0.2 ha. €1656/unit (ACRES Reduced Rate: €787/unit).

Applicant may apply for a fencing action along with this action if required.

Validation:

Relevant geotagged photo(s) submitted through Waters of LIFE App showing clearly the measure that has been applied for.

A15 Tree planting

Planting trees on farms can help recover leached nutrients, stabilise river banks, increase soil infiltration rates, slow overland flow of water, and increase water retention. Where there is a peatland, this action is restricted to planted along watercourses to help stabilise riverbanks and prevent erosion or in small glens or gullies along upland streams.

In some circumstances Forests for Water (FT2) or the Native Tree Areas Scheme (NTA 1 or NTA 2) under the current Forestry Programme 2023-2027 may be a more suitable option. The Waters of LIFE have a Registered Forester who is available to provide further advice and support applications for funding via these schemes. Further information available using the links below or contact your Waters of LIFE Catchment Scientists directly.

https://www.teagasc.ie/media/website/crops/forestry/grants/Native-Tree-Area-Scheme.pdf

https://www.teagasc.ie/crops/forestry/grants/overview-of-forest-establishment-grant-rates/

Requirements

1. This action can be applied for in conjunction with a Spatially Targeted Buffers action (Action 14) and to intercept flow paths identified during Runoff Risk Assessment.
2. Applicants can also apply for this measure where planting of trees along surface waters has potential to lead to a water quality benefit and to improve scores on riverside habitat scorecard
3. The planting of trees under this measure does not contribute to the planting of trees as part of an Eco scheme for Pillar 1 payments.
4. Plants must be of Irish Origin or Irish Provenance and purchased from DAFM registered professional operators. All plants must have accompanying plant passports. Refer to the list of approved trees provided in Appendix IV.
5. Tree species should be suitable for the local soil type (Appendix V).
6. Plant a minimum of 3 species from the approved list of trees to increase diversity and rooting depth. Minimum spacing between trees of 3 m.
7. Min height of trees at planting is 60 cm. Tree guards/shelters required to ensure good establishment.
8. Failed trees must be replaced during next dormant season.
9. Do not remove existing trees, scrub or hedgerow to facilitate the tree planting action.
10. The area must be stock-proof, fencing options can be applied for under Action 1.
11. Access for management must be provided.

12. No fence line is permitted between the water feature and the strip of trees.
13. No grazing of animals.
14. Grass and competing vegetation must be controlled around the trees annually.
15. Site disturbance and inputs must be minimised. Trees should be pit planted in a vegetation free area (no heavy machinery and no drainage allowed).
16. Species selection must reflect the most appropriate native woodland type for the site (based on site, soil, drainage, elevation, etc.). For further details, please refer to DAFM's Forest Standards Manual/Native Forest Framework and the Teagasc website.
17. In arterial drained catchments, the OPW require certain banks to remain vegetation free. Consult with OPW prior to planting in these catchments. Similarly, prior consultation is required with NPWS for planting within a Natura 2000 site (action requiring consent).
18. Avoid potential tunnelling along rivers where both banks are densely planted with trees.
19. Where possible, plant trees on the southern bank of the waterbody to provide shade on the water as a climate change benefit.
20. Planting trees near salmonid rivers require consultation with Inland Fisheries Ireland and additional measures to reduce sedimentation to rivers, particularly during spawning seasons (November/December) and when eggs are in gravels (January-February), to protect these sensitive rivers.
21. Do not plant in the vicinity of overhead wires (see Appendix VI), 20 m of railway lines and with 60 m of a neighbouring dwelling house.
22. Do not remove existing trees, scrub or hedgerow to facilitate the tree planting action.
23. The planted area should be managed as follows:
    a. The area must be stock-proof, fencing options can be applied for.
    b. Provide access for management.
    c. No fence line is permitted between the water feature and the strip of trees.
    d. No grazing of animals.
    e. Grass and competing vegetation must be controlled around the trees annually.
24. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Additional Information on Tree Planting:

Forest land is defined as land under trees with a minimum area of 0.1 ha and tree crown cover of more than 20% of the total area (or the potential to achieve this cover at maturity). To remain in compliance with the Amendment of Forestry Act 2014 under Animal Health and Welfare and Forestry (Miscellaneous Provisions Act 2022), which facilitates the planting of native trees in areas not less than 0.1 ha and not greater than 1 ha without an afforestation licence, the total cumulative area of forest that can be planted on a holding is limited to 1 ha. This would apply to the combination of all tree planting actions that could be considered forests depending on planting layout and density i.e. planting trees in riparian buffer zones.

Payment Rate:

One off payment of €16/tree. Max 100 trees.

Where deer may be a problem, additional funding may be made available for deer proof tree guards.

Validation:

Relevant geotagged photo showing clearly the measure that has been applied for along with proof of costs and evidence of origin of trees.

A16 Willow Filter beds

Willow beds are areas of densely planted willow trees. They help to slow the flow of water, allow sediment to settle out and any traces of dissolved nutrients to be taken up by growing vegetation. They act as a filter and allow for polishing of water from farm roadways and clean concreted yard areas.

All farms must adhere to the most current Nitrates Regulations regarding the storage of silage effluent, dairy washings, slurry and FYM. This measure is not to address any issues that are currently a GAP regulation requirement.

Requirements

1. Willow filter beds are a suitable measure for where small-scale wetland ponds may not be so effective due to the high infiltration rates; however, willow filter beds may be used in any circumstances where there is sufficient soil depth to get them established.

2. Willow filter beds are not suitable for streams or other permanent watercourses or drains with a gravel bed.

3. Willow filter beds can be sited in existing man-made farm drains that do not support or have the capacity to support fish life. If in any doubt contact IFI for clarification.

4. Willow filter beds can also be sited on green field sites. Ensure sufficient soil depth to establish willow cuttings and always consider suitability of location in terms of vulnerable aquifers, proximity to Karst Areas, proximity to waterways and tall hedgerows; soil type, percolation rate and depth; topography of the land and other similar factors.

5. The size of the willow filter bed should allow an internal effective area of ≥10% of the runoff area, whether from farm roads or clean yard areas.
6. Where possible, the willow filter bed should be long and thin but where more width is available or where awkward corners are being used, the shape may be amended. In these circumstances increase the size to 15% of the runoff area if possible, to compensate for reduced evapotranspiration effectiveness.
7. A wetland planted silt trap (10 m x 4-8 m wide) for fines should be installed, where appropriate, at the head of the willow bed, to protect the willow bed from silt accumulation over time. This includes a sump/scrape at the head of the wetland planted silt trap.
8. Any build-up of sediment in the initial planted silt trap should be removed periodically and as required to avoid the willow bed becoming a source of nutrients rather than a sink.
9. Site gradient must be considered in terms of the required number of bunds and the required number of willow filter beds. On sloping sites, place bunds at intervals to enable a series of basins (each level within their own bunded area) to be built with minimum of earth movement.
10. Bund height of 0.5 m but may be up to 1 m in certain scenarios. The higher bund will allow for more storage of water.
11. Ensure bunds are well compacted and allowed to vegetate.
12. Ensure that the bed of the basins used are level and that the embankments are not less than 300 mm high around the perimeter of each basin.
13. Ensure water flowing through the willow bed is dispersed evenly and is not making a single path through the willow bed. During storm events the water should sit to a depth of 10-30 cm across the entire bed, and then draw down afterwards to soil level.
14. Densely plant the willow filter bed with Sallix spp. Cuttings should be responsibly sourced from existing suitable willow trees locally. Ideally, stakes should be no more than 30 cm long and harvested from last year's growth.
15. Where plants are purchased they must have accompanying plant passports and from a DAFM registered professional operator.
16. Plant 6 rows of willows at 0.8 m – 1 m (80-100 cm) spacing between rows and 0.5 m (50 cm) spacing within each row. 2,400 willow cuttings required for an area 4-8 m x 200 m. 1,200 willow cuttings required for an area 4-8 m x 100m.
17. The willow trees should be coppiced on a 3-5 yr rotational basis, depending on inflow, to ensure active growth and uptake of any potential traces of nutrients. Use a circular saw or chainsaw for coppicing & remove cuttings. Cut willow may be chipped for use on the farm, cut for firewood if large enough and dried for 2 years before use, or piled up as a wildlife haven at a distance of ≥10m from the willow bed or any waterway.

18. For health and safety reasons, it is recommended to fence off the area. Funding for this can be applied for under Action 1.
19. Note minor adjustments may be required during installation depending on specific site conditions.
20. Permission required prior to any work if within or close to any protected area, Natura 2000 site or Archaeological site.
21. Please note site location could impact the effectiveness of the willow filter bed measure. The department guidance S133 provides some details on Site Restrictions at the following link:

    https://assets.gov.ie/95195/3f86e4a7-9a32-462c-8d46-9ab5298fa34c.pdf
22. For further details, see Appendix VII.
23. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

- Min 30 m up to a max of 200 m.
- €34/m.
- Applicant must apply for fencing of the Willow Filter Bed separately through the fencing actions.

Validation:

Relevant geotagged photo(s) showing clearly the measure that has been applied for and proof of costs (Receipts/Invoices) submitted through the Waters of LIFE App.

A17 Small Scale Wetland Pond

Ponds and wetlands serve as diverse habitats for plants, insects, birds, mammals, and amphibians, while also acting as natural water filters. They slow water flow, deposit particles, and promote microbial degradation of pollutants in environments with high organic matter. This measure aims to create new wetlands and/or ponds to capture sediment, phosphorus (P), and nitrogen (N) losses along flow pathways to waters.

It should be noted that ponds are not the same as constructed wetlands i.e. they do not require planning permission or a discharge licence. They are not designed to deal with any substance that must be collected under the GAP regulations i.e. silage effluent, dairy washings, slurry etc.

Requirements

1. Small Scale Wetland Ponds must be no greater than 0.2 ha in size. If larger than this, they will become ineligible features under BISS (Basic Income Support for Sustainability Scheme).

2. Small scale wetland ponds can be applied for in ACRES measures Low Input Grassland, Extensively Grazed Pasture and Management of Intensive Grassland Next to a Watercourse where the reduced ACRES rate is applied for (see below).
3. Do not locate in existing areas of ecological benefit or in flood plains.
4. Ponds should be fenced off from livestock. Leave a gap handle to allow for maintenance. Fencing can be applied for under Action 1.
5. Ponds and wetlands are most suitable on impermeable soils where infiltration is limited. Where infiltration is insufficient to hold water permanently, consider a grass margin, willow bed or tree planting instead.
6. Wetlands should be designed to remain permanently wet and allowed to naturally revegetate with native wetland species such as reeds, bulrush, and flag iris (see Appendix II). Where possible, collect the seed heads of common reed, bulrush, etc., and use them to encourage new growth. Edges must have a gently sloping bank, a guide of 50 cm deep and soil must not be banked around the perimeter.
7. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

- Small scale wetland establishment - €800/unit (ACRES reduced rate €627).
- Example sizing = 10 m X 6 m X 0.5 m.

Validation:

Relevant geotagged photo(s) showing clearly the measure that has been applied for and proof of costs (Receipts/Invoices) submitted through the Waters of LIFE App.

4. Waters Crossings

A18 Culverts

The movement of animals, people and vehicles across drains damages banks and aquatic vegetation. This increases the risk of soil particles and plant nutrients entering the drain and the potential for these materials to be transported to a stream or river. Defecation from animals also increases pathogen loading in rivers, which is particularly important for the quality of our bathing and drinking waters. The installation of culverts is only permitted in field drains, not rivers or streams identified as a blue line on the OSI 1:5000 maps. It is the responsibility of the farmer to ensure that all relevant legal requirements are adhered to and relevant authorities consulted prior to any works being carried out.

Requirements

1. Select a suitable drain i.e. one that does not have a gravel bed.
2. Select a suitable location within the drain to avoid any overland flow pathways or critical source areas (CSAs).
3. Ensure crossing design does not impede high flows (consider storm events). Culverts are suitable for the safe passage of livestock/vehicles across land drains in small catchments and gentle slopes.
4. A box culvert is preferable to a piped (circular) culvert.
5. The movement of livestock should be controlled, as the culvert could become a choke point where frequent passage of animals leads to poaching near the drain.
6. Works should be carried out during the July to September time period.
7. IFI should be contacted regarding design and works methodology would need to be agreed between the contractor and the relevant Fisheries Environmental Officer in advance of the works. See guidance manuals at the following link:

   https://www.fisheriesireland.ie/sites/default/files/migrated/docman/2016/Guidelines%20Report%202016.pdf).
8. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

€800 per unit. Min 1. Max 5 units.

Validation

Relevant geotagged photo(s) showing clearly the measure that has been applied for, proof of costs (Receipts/Invoices) and required relevant permissions submitted through the Waters of LIFE App.

A19 River and Stream Crossing/Bridges

River crossings by animals and farm vehicles can introduce sediment and pollutants into the river, especially when the crossing is part of a farm roadway. Replacing such crossings with a properly designed bridge can positively impact the river. The bridge should be fit for its intended purpose and constructed with materials that will not cause pollution (e.g., timber, pre-cast concrete, steel). It should also be appropriately sized for its use, such as for cattle or quad crossings. Clear-span bridges are preferred, as they eliminate the potential for interference with the riverbed.

Requirements

1. It is the responsibility of the farmer to ensure that all relevant legal requirements are adhered to & relevant authorities are consulted with prior to any works being carried out.
2. Planning permission and an Appropriate Assessment may be required for this measure. Please contact your local authority to ascertain what permissions are required.
3. Select a suitable location on the watercourse to avoid any overland flow pathways or CSAs.
4. Ensure bridge does not impede high flows (consider storm events).
5. IFI must be contacted regarding bridge design and works methodology.
6. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

- 50% of cost of bridge installation up to a max of €5,000 per applicant.
- Max 1.

Validation

Relevant geotagged photo(s) showing clearly the measure that has been applied for, proof of costs (Receipts/Invoices) and required relevant permissions submitted through the Waters of LIFE App.

5. Livestock Water Provision

A20 Solar Pumps

Having an appropriate water supply, storage and provisioning system will prevent the need for livestock to access watercourses for drinking water. This will reduce damage to the channel banks and improve water quality. Water troughs provide alternative drinking points to natural water sources which can become damaged if overused by stock. Solar pumps can be a sustainable cost-effective method of supplying water to water storage and provisioning systems (only applicable where grassland stocking rate <170kgN/ha).

Requirements

1. To be eligible for this measure there must be a clear requirement to provide an alternative drinking water supply source for livestock.
2. Ensure there is no risk of double funding with TAMS.
3. The pump should abstract water from a watercourse or waterbody with an adequate supply. Over-abstraction can lead to environmental issues, poor quality water supply and pump failure.
4. Install a solar-powered fixed or mobile pump that is capable of pumping water from a safe supply to livestock water troughs and/or a water storage tank.
5. The solar pump must be purchased new with the system including a pump, solar panels, battery back-up, float switch and hose.
6. The pump should be suitably protected from livestock or wildlife damage.
7. The intake pipe from the stream should have a protective filter/gauze to prevent blockage of pumps.
8. It must be stored on the farm holding when not in use.
9. Where more than one solar pump is being applied for this will only be funded where there is a clear need for the additional equipment, i.e. it is not possible to provide sufficient water to livestock or it is not possible to connect a supply to a second location.
10. Where there is a requirement for several solar pumps across different holdings within close proximity, the advisor shall endeavour to facilitate farmers to come together to install the minimum number of pumps required to service the area.
11. This action can be matched with Action 24 to cover the additional costs of piping and fitting.
12. Solar pumps must be in situ where applicable and fully functional prior to payment being issued by the project team.
13. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:
Solar pump: €2,500/unit; min. 1, max. 2.

Validation
Relevant geotagged photo(s) showing clearly the measure that has been applied for and geotagged photos of the closed-off drinking points/animal access points must be submitted. Proof of costs (Receipts/Invoices) must also be submitted through the Waters of LIFE App.

A21 Water Storage Tanks (IBC Tank)

Water storage tanks are essential for use on fragmented farmland, providing a reliable water source for filling sprayers without drawing directly from streams or rivers. They are also valuable for sheep farmers, offering a safe and contained solution for storing spent sheep dip, thereby reducing environmental impact.

Requirements
1. 1 IBC tank with 1,000L of storage which can be filled in the farmyard and taken to the outside block of land where it must be used for filling the sprayer.
2. Tanks must be non-transparent to block light that encourages algae growth.
3. Applicants cannot apply for funding through the Waters of LIFE and TAMS for the same water storage tank.
4. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:
€400/tank. Min 1. Max 2.

Validation
Proof of costs (must be a new IBC tank to qualify for funding). Geotagged photo of the storage tank in-situ and invoice/receipt from supplier to be submitted through Waters of LIFE App

A22 Pasture Pumps / Hydraulic Ram Pump

Pasture pumps or nose pumps provide alternative drinking points for livestock thus reducing the need for livestock access to watercourses or waterbodies.

This measure is only applicable to those with a Grassland Stocking Rate <170kgs/ha.

Requirements
1. To be eligible to apply for this measure there must be a clear requirement to provide an alternative drinking water supply source to livestock.
2. The pasture pump must be located at least 20 m from surface waters including open drains.

3. The intake pipe from the stream should have a protective filter/gauze to prevent blockage of pumps.
4. The pump should abstract water from a watercourse or waterbody with an adequate supply. Over-abstraction from a watercourse can lead to environmental issues, poor quality water supply, and pump failure.
5. The pasture pump must be purchased new and installed in accordance with the manufacturer's guidelines.
6. Install a fully functioning pasture pump (i.e., a pump operated by the action of the animal accessing the water supply).
7. Where a pasture pump has been grant aided under TAMS or any other National/EU funded Agri-environment or Capital investment Scheme from 01 January 2018, no further funding will be provided by Waters of LIFE.
8. Where more than one pasture pump is being applied for this will only be funded where there is a clear need for the additional equipment, i.e. it is not possible to provide sufficient water to livestock.
9. This action can be matched with Action 24 to cover additional costs of piping and fitting.
10. Pasture pumps must be fixed in situ where applicable and fully functional prior to payment being issued by the project team.
11. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

Actual cost up to maximum of €400/unit.

Validation

Relevant geotagged photo(s) showing clearly the measure that has been applied for and geotagged photos of the closed-off drinking points/animal access points must be submitted. Proof of costs (Receipts/Invoices) must also be submitted through the Waters of LIFE App.

A23 Water Troughs

Water troughs provide alternative drinking points to natural water sources which can become damaged if overused by stock.

This measure is only applicable to those with a Grassland Stocking Rate <170kgs/ha.

Requirements

1. To be eligible to apply for this measure there must be a clear requirement to provide an alternative drinking water supply source to livestock.
2. All troughs must be purchased new.

3. Water troughs should be located at least 20 m from surface waters or at the centre point of the field.
4. Troughs should be located away from wet or waterlogged ground which is easily poached or eroded.
5. Water troughs must not be located within sensitive habitats (e.g., deep peat, sphagnum lawns or mature heather) to ensure that the trough location doesn't result in additional trafficking in these areas.
6. Water troughs must be fully functional and connected to a piped supply or an adequate rainwater harvesting system. It is permitted to turn off the supply of water when animals are not present in the field.
7. Multiple troughs may be installed in a single field to increase water storage capacity and to facilitate rotational grazing systems.
8. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

Actual cost up to a maximum of €300/unit.

Validation:

Relevant geotagged photo showing clearly the measure that has been applied for & proof of costs. Relevant geotagged photos of the closed off drinking points/animal access points must be submitted.

A24 Water supply piping and fittings

This measure is intended to cover the cost of necessary pipping and fittings to associated with the installation of pasture pumps and solar powered pumps with water troughs.

This measure is only applicable to those with a Grassland Stocking Rate <170kgs/ha.

Requirements

1. This action cannot be used in fields where livestock have access to surface waters.
2. This Action can be applied in conjunction with the water troughs, solar and pasture pump measures.
3. This is to help cover the cost of piping and fittings to farmers and should match what has been applied for in solar and/or pasture pump measure.
4. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

€150/unit: to correspond with what is applied for in solar or pasture pump measures only.

Validation

Relevant geotagged photo(s) showing clearly the measure that has been applied for and proof of costs (Receipts/Invoices) submitted through the Waters of LIFE App.

6. Invasive Species Control

A25 Non-native Invasive Species

Non-native invasive species such as Himalayan (Indian) Balsam, Japanese Knotweed and Giant Hogweed can spread rapidly along river corridors, out-competing native vegetation. These species die back in winter leaving large areas of bare soil which can easily erode and cause siltation of watercourses. Removing these species and allowing native vegetation to naturally recolonise these areas can improve both water quality and biodiversity.

Requirements

1. These actions can be identified through the habitat assessment.
2. Removal of invasive species requires specialist training. As a result, these works will generally be commissioned by the Waters of LIFE project team.
3. However, training will be offered through the project and landowners who have undergone this training may wish to carry out this work themselves.
4. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

In general, these works will be commissioned and paid for directly by Waters of LIFE. The landowner will benefit through increased habitat scores and higher associated payments.

Where a trained landowner wishes to carry out these works themselves, payment will be agreed on a case by case basis depending on the significance and type of infestation.

Validation

Relevant geotagged photo(s) showing clearly the area before and after treatment.

A26 Conifer removal

Conifers are cone-bearing trees that are generally evergreen. Common non-native species in the west of Ireland include Sitka Spruce and Lodgepole Pine. In the past, many peatland sites were planted with conifers as it was seen as an economic use of agriculturally poor land. This, however, resulted in significant ecological impacts leading to increased siltation, nutrient inputs, and alteration of water flow in the catchment.

Under suitable conditions, non-native conifers can spread rapidly from adjacent plantations across peatland plots. This reduces the agricultural and ecological value of the peatland. The specific method for removal will depend on the site conditions, size and maturity of the conifers.

On private peatlands, the presence of self-sown conifers will reduce the habitat score. Conifer removal can therefore be recommended through the habitat assessment if the presence of conifers is identified as an issue. The presence of conifers on commonage should be referred directly to the Waters of LIFE project team for follow-up.

Requirements

1. Conifers should be hand-cut.
2. Depending on the nature/sensitivity of the ground conditions, the Waters of LIFE team may require conifers to be removed by hand or left on site (fell to waste).
3. Depending on the age of the conifers, a felling licence may be required. The Waters of LIFE project team will provide advice and assistance on the process of applying for a licence should it be required.
4. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

The payment rates for conifer removal will be assessed on a case by case basis. The level of payment will be dependent on the location of the trees, their number, size and maturity and method of removal. The landowner will also benefit through increased habitat score and higher associated payments.

Where conifers are self-sown on commonage, contact the Waters of LIFE project team.

7. Other Supporting Actions

A27 Water Table Management on Peat Soils

Drained peat soils decompose over time, reducing the amount of soil available for farming and releasing carbon into the atmosphere. They can also be a significant source of sediment in water courses. Therefore, raising the water table in such soils not only protects the environment, it also protects an important farm asset: the soil.

Through the FarmPEAT project it was demonstrated that bringing the water table to within 400 mm of the ground surface confers significant environmental benefits while not impacting on the farm production.

This action can be recommended to either increase habitat score and/or to reduce sediment loss/runoff risk.

Requirements

1. This action can be recommended by the farm advisor either during the Runoff Risk Assessment or during the habitat scoring.
2. Once recommended a member of the Waters of LIFE project team will carry out a site assessment and provide site specific recommendations on the type and number of dams that should be used.
3. The Waters of LIFE project team will commission a contractor to carry out the works.
4. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

The Waters of LIFE will pay for these works directly. The benefit to the landowner will be in increased habitat scores and related results-based payments.

Validation

N/A

A28 Green Hay

Green Hay Transfer has been used to successfully propagate species rich hay meadows across Europe, but is a relatively new methodology in Ireland. The methodology involves cutting hay from a species rich meadow (the donor field) and spreading this freshly cut green hay on a cut species-poor field, ideally on the same day of cutting. In doing so, seeds from the donor field are transferred to the receptor field. Recent studies from the Great Irish Grassland project noted 80% species up take in receptor fields from donor fields after a single year, at case study sites. Please see Appendix VIII for the methodology which should be employed for this action.

Requirements

1. Ideally a receptor site should not have received fertiliser for several years. Fertilised fields favour quick growing grasses which outcompete target species, and the remnants of fertiliser remains present in the soil for a number of years after spreading. Green hay transfer can be attempted after a single year of non-fertiliser usage. This will result in limited increases in species diversity for the first few years until the presence of fertiliser in the soil is exhausted and exponential growth of hay meadow species from the seed bank can be expected.
2. The donor field and receptor field should be in close proximity so that the seed is of local provenance. Fields should have similar geology and soil type to maximise success of species uptake.
3. Cutting of hay at the donor site needs to take place when the donor field has gone into seed, but before the majority of seed has dropped. Late August, early September is best but donor fields will need to be monitored from mid-July onwards to ensure maturation has not occurred.
4. Farmers availing of this measure will need to be flexible with timing of spreading. Donor sites will be screened by the project team, if suitable sites cannot be identified by the farmer, the advisor or the project team will aid in selection.
5. A Green Hay Transfer Plan should be filled out by a farm advisor if applying for this action. A form will be supplied those participants who wish to implement this action, which will be returned to the project team.
6. Appendix I outlines areas where restrictions may be applied to this action due to the conservation objectives of designated sites.

Payment Rate:

€250/ha of receptor site (subject to review).

Validation:

Geotagged photographs of both donor and recipient fields and proof of costs.

A29 Contractor Mobilisation Fee

The fee is payable to facilitate the use of an excavator on a farm for putting in place the following measures:

- Hedgerow Establishment cross slope on low earthen mound
- Small Scale Wetland Pond
- Earthen Bund
- Water Bars
- Sediment Traps
- Culverts
- Watercourse Crossing/Bridges
- Gateway Relocation
- Willow Filter Beds
- Vegetated Bunded Drain
- Bespoke measures (where necessary)

Payment Rate:
A one-time payment of €200 covers the cost of transporting the excavator to the farm.

Validation
Geotagged photo(s) of the measure(s) for which the excavator was required and proof of payment.

A30 Bespoke Measures

Farmers can apply for funding for bespoke measures which provide a water quality benefit. Individual or groups of farmers may have innovative ideas for appropriate actions to improve water quality, participants and their advisors are encouraged to discuss these with Waters of LIFE project team. Farmers can apply for funding for Bespoke Actions on a case by case basis.

Requirements
To receive funding the measure must demonstrate that:

1. It will provide a water quality benefit within the particular catchment area.
2. Bespoke Measures must be identified as part of the Runoff Risk Assessment or plot scoring to be considered for funding by the Project Team.
3. Have detailed costings of the proposed measure.
4. Provide guideline specifications as to how the measure will be installed & implemented.
5. Proof of compliance with legal obligations.
6. Potential restrictions due to the conservation objectives of designated sites will be assessed by the project team for bespoke actions, see Appendix I.

Payment
To be assessed and agreed on a case by case basis.

Validation:
To be agreed on a case by case basis.

A31 Host Farmer Payment

To facilitate outdoor farmer training courses, suitable farms will be needed to host the events. These farms will be approved by the Water of LIFE project team, and a host farmer application form must be submitted. The selected farms will serve as demonstration sites for various mitigation measures, helping to disseminate knowledge to other Waters of LIFE participants.

Payment Rate:
A farmer that hosts a Waters of LIFE course or event will be paid €180 for the use of his/her premises for the course or the event. Host farmers can receive this payment up to a max of 5 times during the lifetime of the project.

Validation

Submission of Waters of LIFE Course/ or Event Host Farm form signed by the organising Waters of LIFE team member and host farmer.

Appendices

Appendix I: Supporting actions with restrictions that mitigate for potential impacts on the conservation objectives of designated sites.

Supporting Action	Action not permitted where there is the following restriction
Permanent Single Strand Electric	Areas used by Geese & Migratory Swans, Breeding Wader Field, Turloughs, Mineral Flushes, Where No Field Scorecard available
Sheep Fence	Permitted, Riparian not permitted in SPA/SAC. Areas used by Geese & Migratory Swans, Breeding Wader Field, Curlew Nest Site < 500 m, Otter SAC & Natural Watercourse < 10 m, Turloughs, Mineral Flushes, Where No Field Scorecard available
Sheep Fence Mountain Rate	Permitted, Riparian not permitted in SPA/SAC. Areas used by Geese & Migratory Swans, Breeding Wader Field, Curlew Nest Site < 500 m, Otter SAC & Natural Watercourse < 10 m, Turloughs, Mineral Flushes, Where No Field Scorecard available
Barb Wire Fence	Areas used by Geese & Migratory Swans, Breeding Wader Field, Curlew Nest Site < 500 m, Turloughs, Mineral Flushes, Where No Field Scorecard available
Deer Fence	Permitted, Riparian not permitted in SPA/SAC. Areas used by Geese & Migratory Swans, Breeding Wader Field, Curlew Nest Site < 500 m, Otter SAC & Natural Watercourse < 10 m, Turloughs, Mineral Flushes, Where No Field Scorecard available
Solar Powered Electric Fencer	Turloughs, Mineral Flushes
Gateway Measures	Turloughs, Mineral Flushes, Area of Action > 1 Ha & in HH Red Zone or NATURA Site
Waters Bars	Turloughs, Mineral Flushes, Where No Field Scorecard available, Area of Action >1 Ha & in HH Red Zone or NATURA Site
Vegetated Bunded Drain	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses < 50 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Turloughs, Mineral Flushes, Where No Field Scorecard available, Area of Action >1 Ha & in HH Red Zone or NATURA Site
Earth Bund	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Bracken with Woodland Flora Understory, Forest < 200 m, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes, Where No Field Scorecard available

Supporting Action	Action not permitted where there is the following restriction
Sediment Trap	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Bracken with Woodland Flora Understory, Forest < 200 m, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes, Where No Field Scorecard available
Hedgerow Establishment- with earth bund	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Bracken with Woodland Flora Understory, Forest < 200 m, Cutover Bog, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Hedgerow Establishment – without earth bund	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, Cutover Bog, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Grassland Buffer Cross-slope	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, HH Roost & Scorecard consideration, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Spatially Targeted Riparian Buffer 0.01-0.04ha	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, HH Roost & Scorecard consideration, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Spatially Targeted Riparian Buffer 0.05-0.1ha	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, HH Roost & Scorecard consideration, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Spatially Targeted Riparian buffer 0.11 to 0.2ha	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, HH Roost & Scorecard consideration, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Tree Planting	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, HH Roost & Scorecard consideration, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes

Supporting Action	Action not permitted where there is the following restriction
Willow Beds	Areas used by Geese & Migratory Swans, Breeding Wader Field, Breeding Wader Hotspot 1 km^2, Curlew Nest Site < 500 m, HH Roost & Scorecard consideration, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes
Small Scale Wetland Pond	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Bracken with Woodland Flora Understory, Forest < 200 m, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes, Where No Field Scorecard available
Culvert	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses < 50 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Turloughs, Mineral Flushes, Where No Field Scorecard available, Area of Action >1 Ha & in HH Red Zone or NATURA Site
River, Stream Crossing/Bridge	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses < 50 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Turloughs, Mineral Flushes, Where No Field Scorecard available, Area of Action > 1 Ha & in HH Red Zone or NATURA Site
Solar Pump	Turloughs, Mineral Flushes, Where No Field Scorecard available
Water Storage Tank	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Breeding Wader Field, Curlew Nest Site < 500 m, Mature Woodland, Turloughs, Mineral Flushes, Where No Field Scorecard available
Pasture Pump	Natural watercourses or Drain < 6 m, FPM Catchment (portion upstream of populations) & Drain < 12 m, Mature Woodland, Turloughs, Mineral Flushes, Where No Field Scorecard available
Water Trough	Natural watercourses or Drain < 6 m, Mature Woodland, Turloughs, Mineral Flushes, Where No Field Scorecard available
Water supply piping and fittings	Natural watercourses or Drain < 6 m, FPM Catchment (portion upstream of populations) & Drain < 12 m, Mature Woodland, Breeding Wader Field, Curlew Nest Site < 500 m, Turloughs, Mineral Flushes, Where No Field Scorecard available

Supporting Action	Action not permitted where there is the following restriction
Non Native Invasive Species Management	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Bracken with Woodland Flora Understory, Forest < 200 m, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes, Where No Field Scorecard available, HH HLNA (Red Zones), HH Roost & Scorecard consideration, Area of Action >1 Ha & in HH Red Zone or NATURA Site, Curlew Nest Site < 500 m
Conifer Removal	HH Roost & Scorecard consideration, Mature Woodland, Turloughs, Mineral Flushes, Where No Field Scorecard available, Area of Action >1 Ha & in HH Red Zone or NATURA Site, Curlew Nest Site < 500 m
Water Table Management on Peat soils	Arterial Drainage Channels < 10 m, Natural watercourses < 10 m, Natural watercourses or Drain < 6 m, Freshwater Pearl Mussel Catchment (portion upstream of recorded populations) & Natural watercourse < 20 m, Bracken with Woodland Flora Understory, Forest < 200 m, Mature Woodland, Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes, Where No Field Scorecard available
Green Hay	Annex Quality Peatlands & Heathlands, Annex Quality Grasslands, Other Peatland Habitats, Turloughs, Mineral Flushes, Where No Field Scorecard available
Contractor Mobilisation Fee	Always paired with another supporting action which have appropriate rules matrix restrictions
Bespoke Measures	Categorised after submission, will always fail on initial screening, and sent to project team for further assessment, including Appropriate Assessment if required
Host Farmer Payment	No potential adverse impacts expected from this supporting action, no rules matrix restrictions required

Appendix II: List of Wetland Plants for Vegetated Bunded Drains (Action A9) and Small Scale Wetland Ponds (Action A17)

Taller Wetland Plants

Bulrush (typha latifolia)

Yellow Flag (Iris pseudacorus)

Blanched Burr Reed (Sparganium erectum)

Red Sweet Grass (Gltceria maxima)

Reed Canary Grass (Phalaris grundinacea)

Greater Pond Sedge (Carex riparia)

Lower Growing Species

Fools Cress (Apium nodiflorum)

Water cress (Nasturtium officinale)

Water mint (Mentha aquatica)

Water mint (Mentha aquatica)

Brooklime (Veronica beccabunga)

Brooklime (Veronica beccabunga)

For any location where these are required, have one tall species as a minimum, and ideally several tall species and also a selection of the lower growing species. Ideally harvest from within the farm or within a closer radius from existing farm drains or wetland areas (but outside of an SAC or SPA). Alternatively obtain from a specialist supplier of native Irish wetland plants.

Appendix III: List of Approved Native Hedgerow Species

1. Blackthorn (Prunus spinosa)
2. Dog Rose (Rosa canina)
3. Guelder Rose (Viburnum opulus)
4. Hawthorn/Whitethorn (Crataegus monogyna)
5. Hazel (Corylus avellana)
6. Holly (Ilex aquifolium)
7. Spindle (Euonymous europaeus)
8. Alder Buckthorn (Frangula alnus)

Appendix IV: List of Approved Native Species for Tree Planting Action

1. Alder Alnus glutinosa
2. Strawberry tree Arbutus unedo
3. Silver birch Betula pendula
4. Downy birch Betula pubescens
5. Hawthorn Crataegus monogyna
6. Holly Ilex aquifolium
7. Crab apple Malus sylvestris
8. Mc Griggors (Crab)
9. Cavan Sweet (Crab)
10. Lough Key (Crab)
11. Aspen Populus tremula
12. Wild cherry Prunus avium
13. Scots pine Pinus sylvestris
14. Burren Pine Pinus sylvestris
15. Sessile oak Quercus petraea
16. Pedunculate oak Quercus robur
17. Common Whitebeam Sorbus aria
18. Rowan Sorbus aucuparia
19. Irish whitebeam Sorbus hibernica

Appendix V: Tree Selection Depending on Soil Type form the Forestry Standards Manual Nov 2023

- Scenario 1: Podzols (Oak-Birch-Holly Woodland)
- Scenario 2: Brown Podzolics (Oak-Birch-Holly with Hazel Woodland)
- Scenario 3: Brown Earths (Oak-Ash-Hazel Woodland)
- Scenario 4: Gleys (Alder-Oak-Ash Woodland)
- Scenario 5: Highly Modified Peat & Peaty Podzols (Pioneer Birch Woodland)
- Scenario 6: Alluvial Floodplains (Alluvial Woodland)

Appendix VI: Tree Planting and Clearance Distance from Overhead Wires

Power line type	Clear distance (from centre of line)
Low voltage (230/400V)	5 m
10 kV and 38 kV	10 m
110Kv	31 m
220Kv	34 m
400Kv	37 m

Note: All trees must be outside their falling distance from line support structures.

Appendix VII: Willow Filter Beds

Willow Filter Beds for clean yard runoff, roof surfaces & farm roads.

Design Sizing and Layout

1. Size at ≥10% of the total contributory catchment area.

2. Select an area down-gradient of the farmyard/road for gravity flow.

3. Ideally keep the system width to between 4 and 8 m wide; but this may be flexible if there is an awkward corner that lends itself to use as a filter bed.

4. Place, where appropriate a wetland planted silt trap before the willow bed for suspended solids retention, sized at approximately 10-20% of the willow bed size.

5. Keep the ground level within each basin level, left to right and inlet to outlet.

6. Plan to build and plant the system between February and April, so that willow planting can commence immediately upon completion.

Construction Notes

1. Remove topsoil scraw (plants and roots) and set to one side for reuse in the base of the willow filter. Remove remaining topsoil and set to one side for reuse in the basin.

2. Mould the subsoil to the required layout. Allow for a maximum drop of 1 m between basins; and use internal bund walls to divide the area available into separate basins where gradients require it.

3. Track back and forth over moist clay for all made ground. This is more effective than simply compacting with the bucket of the digger. It is important that all water remains in the willow basin until it reaches the final outlet point and does not spill out over the field or other area.

4. Dig out the willow filter basin to a depth of 50 cm (or up to 1.5 m where deep clays or peats are present to protect ground water).

5. Replace top scraw (upper area of topsoil) into the base of the willow filter. Replace loose subsoil over this. Finally replace the weed-free topsoil across the upper level of the willow basin.

6. Let outlet pipes horizontal to allow free flow of water through the basins. This may be raised only after the willows have become well established - either in April of year 2, or earlier if needed to hold a bit more moisture during a dry summer in year 1.

Keep the willows weed-free in years 1 and 2. Thereafter the willow growth will keep weeds down. Do not use herbicides, which can be readily absorbed by the willow stems even in winter, killing your willows.

Planting and coppicing notes for willow filter

1. Lower any hedge lines within 5 m of the willow filter to maximise the exposure to light and wind to maximise evapotranspiration and effluent uptake. Keep maintained on an ongoing basis.

2. Willow trees are to be coppiced on a 3-yr rotation basis as set out below:

    - 1st February after planting: cut back all trees to 150 mm above bed level to encourage stem development.

    - 2nd February after planting: leave all willows uncut.

    - 3rd February after planting: cut back all three rows on one side of the filter area to 100 mm above the previous cut.

    - 4th February after planting: cut back all three rows on the other side of the filter area to 100 mm above the previous cut.

    - 5th February after planting: leave all willows uncut.

    - 6th February after planning: Repeat cycle from 3rd year.

3. Coppicing may be carried out with a loppers or brush cutter or tractor mounted hedge cutter.

4. Remove cut trees from the area and store away from drains to prevent re-entry of nutrients into watercourses.

5. Timber may be chipped or logged for fuel, used as a wildlife habitat log-pile, or for landscaping.

6. Note that if firewood is desired, leave cuttings to grow for 5 years rather than 3, and allow cut lengths to dry for 2 years prior to logging for firewood.

Appendix VIII: Methodology for Using Green Hay to Increase Grassland Species Diversity

Great Irish GRASSLANDS

GREEN HAY TRANSFER

What is green hay transfer/strewing?

Freshly cut green hay from a species-rich meadow (donor field) is collected and then strewn on a cut species-poor field (receptor field), ideally on the same day.

It is a way of increasing plant diversity in the receptor field by transferring the seeds from the wild flowers & grasses growing in the donor field.

Why is it useful?

This practice has been found to be a successful nature-based solution for grassland restoration[1] and is commonly carried out in Europe to restore species-rich semi-natural grassland[2].

It has the added advantage of potentially transferring invertebrates and non-vascular plants (mosses etc) from the donor site which allows for a more complete restoration of a natural grassland ecosystem than seed sowing alone[1].

Where might it work?

It will most likely be successful on a receptor field that has not received fertiliser for several years, but such a situation doesn't rule out this method.[2]

Close proximity to the donor site is also favourable, both from the ecological and economic viewpoint, with a quick transfer of green hay from donor to recipient field being essential to its success.

Both the donor and receptor sites should have a similar geology, soil type, hydrology and pH to maximise seed germination and long-term restoration success[3]. The donor field should have few to no 'weedy' species such as docks and thistles.

Seeking advice from an experienced ecologist or farm/agri advisor is recommended.

Steps needed?

1. **Cut** vegetation on **receptor field** as tight to the soil as possible and remove. *Creates open conditions exposing bare soil*

2. **Disc-harrow/scarify receptor field**, at least once, in preparation for the addition of green hay. *This step may be skipped, but this may reduce the chances of success.* *Creates a more suitable environment for seeds to make contact with the soil, increasing the germination success*

3. **Cut** vegetation *(green hay)* on the **donor field** *(August/September)* and collect in a similar way to silage, but try to avoid using a conditioner mower or silage harvester *('low chop' setting has given good results)* so as not to lose seed from the vegetation when mowing and collecting.

4. **Spread** collected green hay across the **receptor field** using a muck spreader; tossing from a trailer may also work if the site is small and resources allow. *Ideally Steps 3 and 4 should occur on the same day, in order to avoid the hay heating up and reducing seed viability*

Depending on the sites, and the distances between the donor and receptor sites, it may be as easy to use a buck rake and pike, particularly if both sites are on the same farm.

5. **Tedd** the green hay three to four times over three days *(skipping this step though has also given good results).*

6. If possible, **roll** the spread green hay to ensure good contact between the seeds in the hay and the soil of the field – this can also be done by raking the hay.

7. The strewn green hay can be **removed** from the **receptor field** after a few days using a baler. *This step is optional as leaving in situ has also yielded good results.*

Results to expect

Despite being used as a method of grassland restoration on mainland Europe for many years, green hay transfer is a relatively new technique in Ireland. It has been used in the United Kingdom for well over a decade and has proved to be a successful method of restoring both upland and lowland grassland communities[4,5,6].

Preliminary results from a green hay transfer in north Cork indicated that 80% of the species recorded from the donor site in 2021 established in the receptor fields in 2022. Species recorded from the receptor fields, but not from the donor site, are thought to have lay dormant in the seed bank of the soil (from when the site was previously under tillage) until the soil was disturbed via disc-harrowing prior to the spreading of the green hay.

The ratio of grasses to broad-leaved herbs (=flowers) changed from 85:15, to 33:66 in the receptor field, and the average number of species in a 2x2m square increased from 8.5 to 19.

Preliminary results from a green hay transfer in Athenry were also positive. Here the receptor field was used for intensive silage prior to the transfer. Despite rye grass being present in all plots, the plant diversity overall within the plots was high and consistent throughout after green hay transfer.

It should be noted that the donor sites in both cases were very diverse and of high quality in terms of a semi-natural grassland. Donor sites of this standard may not be available to the majority of potential green hay transfer users and so achieving similar success rates should not be taken for granted.

Considerations

- Is this the most appropriate method to use in terms of the existing habitat present?
- How close is the donor site to the receptor site and does it have similar soil conditions?
- A donor field just one third the size of a receptor field has been shown to be a useful ratio for calculating how much green hay is needed to adequately cover a site[5].
- The whole process needs careful planning, coordination and timing to ensure success, with several participants taking part working together.
- It takes a lot of machinery together to carry out the process.
- Good weather is also an important factor for the operation.
- Be wary of cutting the green hay too late in the season. The donor site should be checked regularly for grass and wild flower seed production from July onwards, particularly in dry years[7].
- If you have the necessary machinery, it tends to be a less costly method of restoring grassland ecosystems than purchasing commercial seed mixes, and it allows the transfer of species that are not commercially available[2]. Furthermore, it is much more ecologically appropriate to use locally occurring species, and in the proportions and mixes that are naturally occurring already in grasslands. However, if the hiring of machinery is necessary, coupled with increasing costs of fuel, the process can be costly.
- If the amount of green hay available is not sufficient to cover the whole site, a smaller area could be treated and then it in turn could act as a potential green hay source in future years.
- How the receptor field will be managed in the future should also be considered.

Equipment

Each site is likely to be a little different, but the following were used in the case studies:

Tractor and mower
Avoid conditioner mower so as not to lose seed from the stem when mowing. Avoid silage harvesters/shoots for same reason.

Round Baler

Telescopic Bale Handler

Trailer

Rear Discharge Muck Spreader

Harrow
For scarifying the receptor site, which should be cut tightly and material removed.

Grass tedder

Roller

Depending on the sites and distance between sites (donor and receptor it could be as simple as using a buck rake and pike *(or whatever you call a pike where you are from!)*.

In fact, that may be a more likely scenario in many cases, if someone is ecologically minded and wanted to bring lower quality meadows up to the quality of their best meadows on the same farm.