



HEN HARRIER PROGRAMME

Supporting Actions

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An Roinn Talmhaíochta,
Bia agus Mara
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'The European Agricultural Fund
for Rural Development: Europe
investing in rural areas'.



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AGRICULTURE & INNOVATION

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ABBREVIATIONS

ANC	AREAS OF NATURAL CONSTRAINT
BPS	BASIC PAYMENT SCHEME
CFP	COMMONAGE FARM PLAN
CMP	COMMONAGE MANAGEMENT PLAN
GLAS	GREEN LOW CARBON AGRI-ENVIRONMENT SCHEME
GLAM	GENERIC LAND MANAGEMENT SYSTEM
HHP	HEN HARRIER PROGRAMME
SAC	SPECIAL AREA OF CONSERVATION
SPA	SPECIAL PROTECTION AREA
TAMS	TARGETED AGRICULTURAL MODERNISATION SCHEME

The Hen Harrier Programme

Supporting Actions

INTRODUCTION

Agriculture in breeding Hen Harrier Special Protection Areas (SPAs) delivers a range of public goods including biodiversity, carbon storage, flood alleviation and fire risk reduction. The Hen Harrier Programme is designed to support agriculture in these areas by rewarding farmers for the delivery of high-quality ecosystem services with a special focus on habitats for Hen Harrier and their prey. Additional investment through the Programme is available to optimise the delivery of services that support farming in these areas. These are called supporting actions.

The farmer, with the support of their Hen Harrier Programme Advisor and the Hen Harrier Project team can identify suitable supporting actions at field and farm level. By co-funding these actions the Hen Harrier Project co-invests with the farmer in the delivery of improvements that increase capacity to deliver higher habitat scores. By enabling the farmer to enhance upland habitats these investments can support Hen Harrier and their prey base at farm and landscape level.

Supporting Actions are voluntary. Actions are applied for in an Annual Works Plan prepared by the farmers approved Hen Harrier Programme Advisor and recorded on the GLAM system. Annual Works Plans must be submitted by the farmer's Advisor by December 31st each year.

Actions that are considered inappropriate for the site, risk damage to archaeological sites or that may pose a risk to Hen Harrier or other protected species may be refused or

have conditions attached to their approval. If an action is not approved the Annual Works Plan will be returned to the advisor with a comment describing the concerns of the Hen Harrier Project. To address the issue the participant and their advisor may delete the action, relocate it, replace it with another action or enter commitments regarding date or the methodology for delivery. Supporting actions submitted to the Programme must be new works. Proposed Annual Works Plans that contain applications for infrastructure that is already in place will be rejected.

Supporting Action allowances are €50 per ha of designated land, up to a maximum of €2,000 per year. In addition to their annual allowance all farmers can plant up to 100m of Wild Bird Cover on top of the supporting action allowance and selected farmers can install a fire pond. On Commonage land there is a separate allowance of €50 per ha up to a maximum of €2,000 per year per participant for each commonage. This is in recognition of the extra challenges associated with delivering group actions on a commonage site. The commonage allowance can only be spent on Commonage.

Approved actions will be paid for on a rolling basis. They must be certified as delivered by an advisor, Project Officer or other approved person using the Hen Harrier App. Linear Actions such as a strip of wild bird cover or a fence can be certified as partially delivered, in these cases payment will be made based on the actual scale of delivery. Partially delivered does not cover uncompleted actions, e.g. Wild Bird Cover Strip where the site was prepared but no crop established, nor does it cover point actions such as a water trough that was purchased but not installed.

Certain actions where there a number of payment rates, e.g. water troughs which has different rates for different

sized water troughs will be paid at the lowest rate unless an invoice is provided to show the details of the purchased item. This invoice must be forwarded to the Hen Harrier Project within 1 month of the certification of delivery. This provision applies to:

- Water Troughs
- Storage Tanks
- Piping
- Culverts

The participant can apply for and deliver approved actions in excess of their allowance in a single year, but their payments will be capped at the level of their allowance. The balance may be drawn down in a subsequent year. In delivering actions special care should be taken to reduce the level of disturbance associated with the delivery of the action. This requirement is particularly relevant to actions that require the use of vehicles or machinery including permanent fencing, improvements to access and drain blocking.

The use of vehicles or machinery for the delivery of actions on wet grassland, species rich grassland, bog, heath, scrub and woodland fields should be avoided in the March to August period.

The level of support for individual actions depends on whether they represent non-productive investments with no agricultural benefits, e.g. linear strips of wild bird cover or whether they have a dual role in supporting the delivery of ecosystem services and a conventional agricultural output, e.g. improvements to access.

Non-productive investments receive 100% support, dual purpose investments receive up to 50% support.

There are five categories of supporting actions. These are:

1. Farm Infrastructure for Optimal Grazing
2. Habitat Enhancement
3. Linear Features and Prey Support
4. Farm Enterprise
5. Commonage

Applications for actions connected with farm infrastructure must represent proposed investments in new infrastructure or the replacement of non-serviceable or obsolete assets. A proportion of proposed actions will be inspected prior to approval to determine that this is the case.

The Hen Harrier Project team welcomes ideas from participants and advisors about actions not listed here. Suggestions should be discussed with Project Officers and made in writing to the Project Manager at the email address fergal.monaghan@henharrierproject.ie.

1. LEVEL OF SUPPORT

SUPPORTING ACTIONS: FARM INFRASTRUCTURE FOR DELIVERING OPTIMAL GRAZING

Action	Cost of Delivery*	Support	Net Payment (Maximum of)
Improvements to access, tracks/ culverts etc	€8 / m	25%	€2 / m
Gates (Invoice needed)	€299	50%	Max of €149.50
Fencing, (Post and Wire), Not available where the participant has availed of the TAMS Sheep fencing grant.	€8.01 / m for Hill Sheep Enterprises €5 / m for all other Enterprises	50%	€4.00 €2.50 / m
Permanent Electric Fencing	€3.50 / m	50%	€1.75 / m
Pasture Pump	€350	50%	€175
Hydraulic Ram Pump	€500	50%	€250
Solar Powered Pump	€1,595	50%	€747.50
Solar Pump (High Pressure)	€1,995	50%	€997.50
Water Troughs:			
Rectangular (Plastic) 450 gal	€530	50%	€265
Rectangular (Plastic) 350 gal	€450	50%	€225
Rectangular (Plastic) 250 gal	€400	50%	€200
Rectangular (Plastic) 180 gal	€335	50%	€167
Rectangular (Plastic) 90 gal	€120	50%	€60
Rectangular (Concrete) 550 gal	€490	50%	€245
Rectangular (Concrete) 400 gal	€380	50%	€190
Rectangular (Concrete) 300 gal	€350	50%	€175
Rectangular (Concrete) 240 gal	€275	50%	€137.50
Rectangular (Concrete) 150 gal	€215	50%	€107.50
Storage Tank (Plastic) 6,000 l (1320 gal)	€1,200	50%	€600
Storage Tank (Plastic) 3,000 l (660 gal)	€596	50%	€298
Storage Tank (Plastic) 1,360 l (300 gal)	€270	50%	€135
Storage Tank (Concrete) 2,500 gal	€3,075	50%	€1,535
Storage Tank (Concrete) 1,800 gal	€2,214	50%	€1,107
Storage Tank (Concrete) 1,100 gal	€1,353	50%	€676

SUPPORTING ACTIONS: FARM INFRASTRUCTURE (CONTINUED)

Action	Cost of Delivery*	Support	Net Payment (Maximum of)
Culverts:			
Plastic piping 6m x 0.6m (diameter)	€223	50%	€111.50
Plastic piping 6m x 0.45m (diameter)	€140	50%	€70
Concrete piping 1m x 0.45m (diameter)	€114	50%	€57
Concrete piping 1m x 0.6m (diameter)	€153	50%	€76.50
Concrete piping 1m x 0.9m (diameter)	€273	50%	€136.50
Hardcore:			
Pencil (3 tonnes)	€33	50%	€16.50
Sandstone (3 tonnes)	€36	50%	€18
Limestone (3 tonnes)	€36	50%	€18
Hydrodare Piping:			
½ inch Normal 150 m roll	€60	50%	€30
½ inch Heavy 150 m roll	€110	50%	€55
¾ inch Normal 150 m roll	€110	50%	€55
¾ inch Heavy 150 m roll	€160	50%	€80
1 inch Normal 150 m roll	€178	50%	€89
1 inch Heavy 150 m roll	€230	50%	€115
Labour			
Only available for miscellaneous actions proposed by the participant. In all other cases the cost of labour is factored in to the published cost of delivery.	€12.40 / hour	50%	€6.25
Targeted grazing infrastructure (solar powered electric fencing etc)	€500	50%	€250

SUPPORTING ACTIONS: FARM ENTERPRISE

Action	Cost of Delivery*	Support	Net Payment (Maximum of)
Bord Bia Quality Certification	€600	50%	€300

SUPPORTING ACTIONS: HABITAT ENHANCEMENT

Action	Cost of Delivery*	Support	Net Payment (Maximum of)
Grazed Fuel breaks	€0.82 / 100m	100%	€0.82 / 100m
Planting Willow Firebreaks	€5 / m / year	100%	€5 / m / year
Restoration of Peatlands:			
Drain Blocking (Peat Plugs, Plastic, Wood, Stone Dams)	€0.76 / m €1.76 / m where composite dams are required on channels wider than 1m or on slopes steeper than 10%	100%	€0.76 / m
Safer Nesting Sites, measures to promote the development of nesting habitat remote from Commercial Forest Plantation.	€500 in year of delivery, €100 per afterwards	100%	€500 in year of delivery, €100 per afterwards
Flail Cutting. Not available in Rush where the GLAS Hen Harrier measure is being claimed.	€0.50 / m	25%	€0.12 / m

SUPPORTING ACTIONS: LINEAR FEATURES AND PREY SUPPORT

Action	Cost of Delivery*	Support	Net Payment
Linear Strips of Wild Bird Cover. Support under this action can include payments on undesignated land in parcels containing or adjacent to SPA lands.	€3.59 / m	100%	€3.59 / m**
Planting new hedgerows, new hedgerows cannot be on the same boundary as hedges supported through GLAS. This can include payments on undesignated land in parcels containing or adjacent to SPA lands.	€5 / m / year 60% in year of delivery 40% 2 years later †	100%	€5 / m / year
Cutting Rides through Scrub	€1.40 / m	100%	€1.40 / m

*(Unit cost unless otherwise indicated); † (on confirmation of establishment).

** The Hen Harrier Project offer a bonus 100m linear strip of Wild Bird Cover on top of each participants Annual Works Plan allowance each year. Fields eligible for this measures can be non designated parcels within the participants BPS. Only fields that have a habitat score of less than 5 and have low numbers and cover of positive indicator flowering plants can be considered for this measure.

2. GENERAL PROVISIONS

- Supporting Actions are applied for by a HHP approved farm advisor acting on behalf of the participant by the submission of a proposed Annual Works Plan through the GLAMS system;
- actions will be screened for Appropriate Assessment by the Hen Harrier Project Team. They will also be assessed for their suitability in respect of the site and the objectives of the Hen Harrier Programme;
- where one or more actions are not approved the entire Annual Works Plan will be returned to the Advisor. To correct this, the plan must be amended to remove, relocate or replace the queried action with an alternative action. The amended plan must then be resubmitted by the advisor for consideration by the Hen Harrier Project Team;
- conditions may be attached to the approval of actions;
- a works period will be set for approved actions. The action can only be delivered during this period. This is done where it is necessary to comply with legislation or to reduce disturbance to wildlife or where it is needed to ensure successful delivery of the action, e.g. New Hedgerow Planting;
- actions are normally only approved on land designated as Hen Harrier SPA that are part of the contracted area of a participant. New hedgerows and linear strips of wild bird cover can however be considered on adjacent non-designated SPA land farmed by the participant;

- actions to improve access or provide a water supply and in exceptional cases gates and fencing can be supported on non-designated land if they are required to service SPA designated fields;
- the advisor should give a short explanation of the reasons for the planned action and the anticipated benefits that would arise from its delivery;
- approval of an action does not exempt the participant(s) from planning or other regulatory requirements or to obtain the consents of third parties (where these may be required). The Hen Harrier Project Officer will advise the participant on how these can be obtained;
- by agreement between the Forest Service and the Hen Harrier Project there is a general exemption from the requirements for a tree felling licence in the following circumstances:
 - the removal of self-sown conifers.
 - the removal of emergent trees from scrub considered to be potential Hen Harrier nest sites.
 - the removal of conifers (e.g. Spruce and Pine species) from small patches of semi natural woodland.
 - in all cases the action must be approved by the Hen Harrier Project team and carried out using the methods outlined in that approval. The exemption only applies to individual trees or to small patches of scrub or woodland < 0.2 ha. The exemption is limited to contracted participants in the Hen Harrier Programme and is limited to lands designated as Special Protection Area for breeding Hen Harrier;

- a failure to abide by conditions attached to the approval may result in the withdrawal of financial support for the action;
- actions must be delivered by March 31st of the year following the approval by the Hen Harrier Project team. Approval for actions will expire after that date, the participant is free to reapply for the action in subsequent annual works plans;
- delivery of actions must be certified by an approved advisor or by the Project Team. Certification can only be done using the Hen Harrier Project App;
- invoices are required to support the certification of the delivery of certain actions. Where there are multiple rates of support for an action, invoices are required to justify payment at the higher rates. Where invoices are not supplied within the required time period payments may be delayed until they are provided or paid at the lowest rate for that action. If paid at the lowest rate no top up payment will be made if an invoice is subsequently provided. Actions for which invoices must be submitted are:

Item	Terms of Payment
Gates	Payment will be delayed until invoice is provided
Solar Powered Fence	
Water Pumps	
Miscellaneous Items	
Storage Tanks	Payment will be made at the lowest rate
Water Piping	
Water Troughs	Payment will be made at the lowest rate for the relevant category
Culverts	

- supporting actions will be paid by electronic funds transfer to accounts nominated by individual participants. Payments for actions on commonage can be made to individual accounts or to a third-party account as requested by the participants.

Supporting Actions on Commonage

- only one Annual Works Plan can be prepared for a commonage. All HHP participant shareholders on the commonage must be informed of the proposed plan. It is the participant's responsibility to ensure that proposed actions are acceptable to other shareholders. Approval for a supporting action in the Hen Harrier Programme does not imply that the participants have the right to implement actions that impact on non-participant shareholders use of the commonage. The relationship with non-participant shareholders remains the responsibility of the participants; and,
- proposed actions must not be listed as part of a CFP (Commonage Farm Plan) or a CMP (Commonage Management Plan).

NEW HEDGEROW ESTABLISHMENT

Hedgerows are valuable assets on a farm. They serve as stockproof boundaries for the management of grazing animals and they provide food and shelter for birds and wildlife. Hen Harrier show strong preferences for foraging along intact, dense structured hedgerows between 3 and 4 metres wide. Supporting actions on farm plans therefore should establish and restore hedgerows to these ideal specifications.

Generally, the majority of hedgerows along field boundaries are >2m wide. New hedgerows should be established to increase available habitat and improve connectivity between land parcels. Hedgerow establishment is not suitable for heath / bog or scrub / woodland habitats.

New hedgerows can be slow to establish, may be prone to failure if not cared for when young and in these cases are of limited short-term benefit to Hen Harrier. For these reasons new hedgerows are limited to 50% of the funding available for actions over the contract period. New hedgerows cannot be on the same boundary as hedges supported through GLAS.

Hedgerows may be planted on undesignated land in parcels containing or adjacent to SPA lands. The payment for new hedgerow establishment are made in two instalments, 60% at the end of the year of planting and 40% two to three years later following certification that the hedg has

Linear features such as hedgerows are important for foraging Hen Harrier.



established. The funds required for these actions are drawn from the total allowance over the remaining contract period. They are not limited to the allowance available in each year of the programme.

Site Selection

The location and length must be identified on the GLAM system. The new hedge must be a standalone hedge and not placed against an existing hedgerow or a stone wall.

New hedgerows must **NOT**:

- be planted on bogs or heaths, i.e. **peat soils**;
- be planted in scrub / woodland;
- be planted within 30m of an archaeological site. (30m is a minimum, it may need to be increased near vulnerable sites);
- replace valuable existing habitats on designated land, e.g. high value vegetated earth banks, particularly those with Bilberry, Bramble or Heather;
- be planted on dual designated land, i.e. land with an SAC designation and an SPA designation;
- have already been funded through GLAS.



Hedgerow species need to be suitable for the conditions (soil and location).

Planting Hedgerow

Plant a minimum continuous length of 10m of new hedgerow consisting of 6 plants per metre in a double row 0.8 to 1.2 metres apart.

- If planted on an earth bank they should be planted to the side of the bank rather than on top;
- the species planted should be informed by what species are doing well in similar sites in the locality. Hedges must contain at least two woody species per 10m. New hedges greater than 50m in length must contain at least four woody species. Suggested species include Willow, Hawthorn, Blackthorn, and Holly.

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- occasional tree species can be included in the planting mix e.g. Crab Apples, Hazel, Mountain Ash (Rowan) preferred;
- shrubby species e.g. Guelder Rose can be planted in small numbers as part of the planting mix;
- no conifers are to be included in the planting mix.
- due to the risk from Ash dieback (*Chalara fraxinea*), Ash is not to be planted in the new hedge;
- the site must be cleared of existing vegetation to facilitate establishment. Herbicide must not be used if the new hedge is connecting parts of a relic or fragmented hedgerow or has a direct link to a watercourse;
- the soil can be enriched with well-rotted farmyard manure. Small quantities of a low N fertiliser such 7:6:17 can also be applied at the planting stage;
- planting should be carried out between December 1st and March 15th. New hedges must be protected from livestock and other grazers (e.g. deer or hare). All newly planted hedges planted in grass must be fenced off and protected from livestock, permanent post and wire fencing (either 1 row of electric fence wire or 3 strands of barbed wire. If sheep enterprise than sheep wire topped with a single strand barbed wire). If the fence or a portion of it has been grant aided under the TAMS scheme the payment for this action will be reduced accordingly. If deer or hare pose a threat to the newly planted hedge, then planting should be delayed until March and the protective fence should include chicken wire or plants should be fitted with tree guards;

- where the newly planted hedgerow bounds a private laneway, public road or watercourse, fencing is not required on the laneway/road or water body side if the hedge is not being damaged by livestock or other grazers;
- the fence must be stock-proof and fit for purpose. The fence should not interfere with aftercare, leave sufficient space between the new hedge and the fence to facilitate maintenance.

Aftercare

The new hedge will require careful management for at least two years after planting. Key tasks include:

- replacing failed plants;
- controlling competing vegetation. The use of herbicides or strimmers for the control of competing vegetation pose a serious risk to the newly planted hedge and is not recommended. Competing vegetation can be manually pulled;
- application of a low N fertiliser, e.g. 7:6:17 or 10:10:20 in Spring;
- maintaining protective fencing;
- most species should be topped, i.e. cut back to a height of 15- 30 cm in the first or second winter after planting (depending on vigour) to encourage multiple growing stems. This does not apply to occasional trees such as Oak or Mountain Ash.

Establishment

It should be noted that 40% of the payment is made after the establishment of the new hedge. Establishment can be verified two years after planting. The minimum standard to verify establishment is:

- 3 established trees per metre over 90% of the length of the new hedge;
- at least two woody species per 20m length, at least four woody species per 50m length;
- no gaps greater than 1m;
- 95% of plants topped to encourage bushy growth; ,
- protective fencing intact and fit for purpose.

Failure to establish can be caused by many factors including:

- poor site selection;
- inappropriate species choice;
- incorrect planting technique, e.g. plants put in too deep;
- failure to control competing vegetation or replace dead plants;
- damage caused by animals (wild and domestic);
- fire damage.

If a hedge has not reached the minimum standard to certify establishment after 2 years, the advisor and the participant can delay a claim for the establishment payment for another year to allow issues to be remedied (certification of establishment cannot be delayed beyond the participants contract period).

If the hedge fails to establish due to poor site selection, species choice, failure to control competing vegetation or replace dead plants or because of damage caused by animals or fire the second payment will not be issued.

4.

LINEAR STRIPS OF WILD BIRD COVER

On more improved grasslands it may not be possible to produce an optimum sward. In these situations the creation of wild bird cover may be an appropriate action to increase the food supply by supporting prey species and to provide hunting opportunities for Hen Harriers.

One of the key issues facing Hen Harriers is the loss, degradation, and fragmentation of suitable foraging habitat. Birds feeding chicks are forced to travel long distances in search of prey and this increases the susceptibility of eggs and young to predation (nests left unguarded). Increasing the productivity of habitats close to nests can boost the supply of food to chicks and improve the defence of the nest against predators. Converting a strip of appropriate grassland into a strip of wild bird cover provides insects and seeds for small birds and small mammals and provides opportunities for hunting Hen Harriers.

Wild bird cover is normally a spring sown crop. This action can be delivered on SPA designated lands and on undesignated land within 1km of the boundary of a breeding Hen Harrier Special Protection Area. It is

not available on SAC designated sites or on species rich grassland, Bog/ Heath or Scrub/ Woodland fields. On wet grassland fields this action is not available if the number of positive indicators is greater than 5 and the cover of positive indicators is Low-Medium or Medium-High.

Wild Bird Cover

The crop is sown as a strip 9 m wide, running parallel to an existing hedge. The crop should be sown on the sheltered side of the hedge, ideally on the southern or eastern side. If livestock are present the crop must be protected by a stockproof fence. An uncultivated grass strip at least 1 m wide must be retained between the hedge and the seed crop. The crop must contain a cereal crop (preferably Triticale) and Linseed. Other seeds such as Buckwheat, Gold of Pleasure, Mustard, Fodder Radish, Forage/ Oil Seed Rape and Vetch may also be included in the seed mix. The sowing rate is 7.5 Kg of Triticale/ 100 m strip and 1.5 Kgs of Linseed. Other seeds should be in much smaller quantities. Triticale is the recommended cereal crop; it has considerable advantages over Oats as it is better suited to acidic soils and poor ground conditions. It also has stronger straw which will delay lodging. The chaff on the seed triticale makes it less attractive to birds and rodents ensuring that seed consumption is delayed until other food sources are depleted, this will ensure that a significant feed resource is retained into the mid-winter period.

- prepare the site as early as ground conditions permit. Burn



Rotovation of the strip 1 metre from boundary. Minimum length supported is 80m length.



Rotovation of 9 metres width.



Sowing of seed and granulating with lime.



Rolling of the strip several times to ensure seed to soil contact.

off the existing sward with a suitable herbicide to prevent competition with perennial grasses. It is important to avoid drift into the adjacent hedge or uncultivated grass strips.

- sites for wild bird cover should be power harrowed rather than ploughed. This reduces post cultivation soil carbon loss.
- the crop must be sown by May 31st each year, where a spring sown crop has failed it is permitted to establish an Autumn sown crop with suitable winter cereals 10 Kgs/ 100 m strip or 0.5 Kgs/ 100m of Forage Rape. Availing of this option will prevent the use of the site for wild bird cover in the following year.
- the action must be delivered in an 11 m wide strip along a field boundary (9m crop with a 1 m grass strip between the crop and the hedge and a further 1 m grass strip between the crop and the fence). The minimum length of a strip is 80m. This action can be delivered at multiple locations on the farm.
- the wild bird cover does not have to remain in the same place for the duration of the project. It can be established in different locations each year.
- the crop must remain in situ until the March 15th the following year. Livestock may enter the parcel from March 15th to planting time, to aid in the decomposition of the trash.
- linseed/ cereal mix 1.5 kg Linseed for a 100m strip plus 7.5 kg of Triticale/ ha for 100 m
- pesticides cannot be applied post sowing.

- Annual weeds particularly weeds of cultivation are a positive feature of wild bird cover strips.
- one bag of granulated lime and 0.5 bags of 10:10:20 should be spread on each 100 m strip at the time of sowing
- all seeds can be scattered by hand, but it is important that they are rolled into the seed bed immediately after sowing.

When you have finished growing wild bird cover on a site, let grasses and herbs regenerate naturally from the seed bank in the soil.

5. PEATLAND DRAIN BLOCKING

In its natural state peat is up to 90% water. Drainage removes water and allows air to penetrate the peat. This results in the oxidation of peat and the loss of the carbon store to the atmosphere. The breakdown of peat also liberates plant nutrients which favour the growth of grasses at the expense of Sphagnum moss and other peat forming species.

The scoring system for bog and heath rewards sites where the full suite of ecosystem services is delivered, i.e. biodiversity, carbon sequestration, fire risk mitigation and water quality. Raising the water table by blocking drains increases the resilience of the bog, the farm enterprise, and the landscape to the impacts of climate change. It is one of the best strategies for improving the score on a peatland site.

Types of Drains

- intercept drains or cross-slope drains. This is a drain placed at the higher end of the area to be drained. It diverts water flowing down the slope away from the areas below the drain.
- roadside drains to protect the surface of the track/roadway from scouring.
- sub-surface drains, (sometimes called French drains, land drains, pipe drains etc), not a common feature on peatlands.
- gullies- natural looking channels but created by changes to natural drainage patterns caused by overgrazing or burning of vegetation.
- drains on deep peat, often dug to facilitate turf cutting:
 - drains where the base of the drain reaches the underlying substrate.
 - drains where the base of the drain is still within the peat layer.

Drain Blocking Techniques

The purpose of blocking drains is to raise the water table on the site. Dams slow the flow of water in the drain resulting in the deposition of suspended particles. The slower flow also facilitates the establishment of vegetation, in particular Sphagnum moss species. Both processes result in a gradual infilling of the drain and a restoration of the bog ecosystem. It is important that drain blocking is planned, that suitable materials are used and that potential hazards to livestock or damage to access tracks is avoided and mitigated.



Use of a peat dam on a bog drain



Water build up post blocking

Peat Dams

Peat dams are the cheapest type of dam to construct and are the type that are most commonly used in Ireland. Peat dams constructed by hand can only be used in drains less than 1 m wide and 75 cm deep that do not reach down to the mineral layer underneath the peat. Excavator machinery is needed for the construction of wider dams; however, precautions need to be taken to ensure that a fragile bog surface is not

irreversibly damaged by machines carrying heavy loads of humified peat. Never use dried out or unconsolidated peat in the construction of a peat dam. Only fully waterlogged peat should be used to construct a dam. The peat is sourced from borrow pits within the site. A notch is cut into the banks of the drain to help secure the peat in position. As the peat is inserted into the drain, it should be compacted. The finished dam should stand about 30 cm above the surrounding bog. The width of the peat dam is generally between 75 cm and 1m.

The dams should be placed in a series, with one dam for every 10cm drop in elevation. There should be a minimum of 3 dams/100 m up to a maximum of 10 dams/ 100 m depending on the slope of the site. This will avoid creating an excessive number of borrow pits. If more than 10 dams/100 m are required the slope may be too steep and the water velocity too high for peat dams to be effective.

The slope can be calculated by using 3 m sticks and a spirit level. The vertical stick should rest on the base of the drain, the horizontal stick should be level (use a spirit level).

This process should be repeated at regular intervals along the drain and an average calculated. If the slope is 3% or less than 3 dams are required per 100 m. If it is greater than 10% then the drain is too steep for peat dams and other methods should be considered.

Drains that are wider than 1 m will require composite dams where peat is reinforced with timber sleepers. Drains deeper than 75 cm particularly where the banks are steep will require reprofiling. This means pulling some of the material from the top of the bank into the drain to create a shallower drain with gently sloping banks.

Plastic Drain Piling

Plastic drain piling is impermeable, light, sturdy and easy to transport. It can be purchased in lengths of up to 3m. Sheets of the piling measuring 30cm wide interlock with one another using a tongue and groove system. They can be hammered into a drain individually using a large rubber mallet. Plastic Drain Piling is an alternative to peat dams, it can be an option where the use of machinery for the excavation of peat for dams is not practical.

The use of solid dams can help restore natural drainage patterns and encourage the colonisation of characteristic vegetation.



As with peat dams there should be a minimum of 3 dams/100 m. There is no maximum number of dams per 100m, however if the slope is significantly greater than 10% the benefits in terms of raising the water table relative to the cost will diminish.

Composite Dams.

On slopes steeper than 10% or on drains that are more than 1m wide composite dams using a combination of timber untreated sleepers (ideally Larch or Oak) and plastic piling or peat can be used. In these cases, one dam for every 10cm drop in elevation is required. Timber dams should be covered in peat. Composite dams can be further supplemented with peat and or bales of heather or rushes.

Irrespective of the construction method the depth of water in the pool created by the dam should be less than 50 cm deep and no more than 75cm. This is necessary to ensure that vegetation, in particular Sphagnum moss, can grow within the blocked channel.

6. IMPROVED FARM ACCESS

The scattered parcels found on many breeding Hen Harrier SPA farms make the provision of vehicular access tracks a high priority for many farmers. A well-constructed track can facilitate an appropriate grazing regime and help ensure the ongoing management of areas which are at the risk of partial or total abandonment. This will increase the farmers capacity to positively manage the farm for the delivery of ecosystem services leading to higher scores and payments. Actions supported under this measure:

- use of a mulcher or a heavy-duty flail mower to open areas of scrub;
- construction or improvement of roads and trackways including culverts; and,
- gates.

Seasonal restrictions on the works period are likely with this action.

Note:

The derogation from the requirement for a tree felling licence does not extend to this measure. If trees need to be removed to improve access, then the participant must obtain a tree felling licence. The Hen Harrier Programme will advise the participant on how to obtain this.

Roadside Drains

These are a feature of improvements to access and not the drain blocking action. Roadside drains protect the surface of the road from scouring by water. Drains along tracks and roads carry large volumes of water. Very often, this is directed into watercourses and can contribute to a rapid increase of flow in receiving channels.

Complete blocking of drains is rarely practical as the water may overflow onto the road, damaging its surface and be lost. The discharge of water from the drain can be managed by diverting it into vegetated areas in preference to channelling it direct to streams. This is achieved by cutting notches at regular intervals along the drain. Partial blockage of roadside drains may also be an option if it facilitates the establishment of vegetation and slows the velocity of water in the drain. This can be a useful strategy where complete blocking could lead to damage to the track surface by scouring or where an increase in the water level could result in the track surface being submerged.

Discharge points should cut in at least 1 every 20m along the drain. The maximum length of roadway draining direct into a stream or river should not exceed 30m. The location of drains to be blocked must be mapped on GLAM.



Pasture pumps can ensure that animals have a constant supply of fresh water.

7. WATER PROVISION FOR LIVESTOCK

Livestock need drinking water. The provision of additional water sources may be required:

- where it is needed to support the use of livestock to deliver environmental services in fields without a reliable water source.
- to stop damage to watercourses caused by cattle drinking from them or wading through them.
- where the preservation of a vulnerable river bank requires that access by livestock be prevented, an alternative water point may have to be supplied.

The provision of a clean supply of fresh drinking water for livestock is critical for the targeted grazing of breeding Hen Harrier SPAs.

The lack of a reliable water source can lead to under grazing, increased vulnerability to wild fire and a higher risk of abandonment. Under-utilisation of some parts of the farm during a drought can increase pressure on other fields leading to localised overgrazing or forced grazing of silage ground. Inappropriate access by livestock to water channels can also have a negative impact on the water resource resulting in eutrophication and a loss of biodiversity.

Upland streams are prone to dramatic variations in flow and as a result there may be insufficient water to meet livestock needs at critical times. In other situations, water resources may be reliable but are prone to pollution by livestock.

Addressing these issues by investing in water infrastructure can protect water resources and increase the farmers capacity to optimally manage grazing lands. Supporting actions supported under this measure include:

- water troughs
- pasture pumps
- solar pumps
- ram pumps
- water pipes
- storage tanks

The location of water infrastructure must be mapped on GLAM. This includes the location of pumps, storage tanks and water troughs as well as routes for pipelines.

8. GRAZING INFRASTRUCTURE

Permanent or temporary electric fencing will enable the farmer to better manage the range of habitats on the farm and to improve fire resilience by spatially targeting grazing at the correct time of year in peatlands. Actions supported under this measure:

- permanent fencing / post and wire / sheep wire (no dual payment with TAMS is permitted).
- permanent electric fencing. Action is not permitted along a boundary with a public road unless there is a wall or hedge between the fence and road.
- solar and mains power units for electric fences

The location of proposed or enhanced tracks or roads or gates must be mapped on GLAM. Post and Wire fencing requires the use of 2-3 strands of barbed wire on permanent posts (wood or plastic) with sufficient strainers to maintain tension. Sheep wire fencing requires permanent posts with sufficient strainers to maintain tension. Fence can include a strand of barbed wire on top. Permanent electric fencing requires permanent posts (wood or plastic). Wire type is not specified but must be fit for purpose.

- Temporary electric fencing; and,
- Gates – not allowed for new entrances from public roads

Permanent fencing will not be supported on previously unenclosed lands. Seasonal restrictions on delivery may be required in sensitive areas.

9. CUTTING RIDES THROUGH SCRUB

While scrub is a valuable habitat for Hen Harriers and many of their prey species, its value can be optimised through management. Encroachment of scrub onto grassland can be controlled by cutting if required. Increasing the surface area of a large block of scrub provides more edges and a linear feature for Hen Harriers to hunt along as well as opening access for livestock. It can also act as a firebreak.

Action:

This action should be considered on large areas of scrub with a low habitat score (<6). Large patches of tall gorse (with just dead leaves on the ground) can be enhanced by cutting rides.

- cut a strip or ride approx. 5-20 m wide through the gorse. Heavy duty flails or forestry mulchers are ideal.
- seasonal restrictions will be applied to this action.
- cut material can be removed from site or stacked to decay naturally.

Note:

This action will not be approved on fields on particularly sensitive areas such as those containing or in close proximity to known nest or roost sites. Existing hedgerows must not be removed by this action.



Scrub is an important foraging habitat on farmland for Hen Harrier.

10. FUEL / FIRE BREAKS

Wildfires are a serious threat to farm enterprises and to wildlife habitats. This measure breaks up the continuity of fuel in the landscape, increasing resilience to wildfires by breaking up areas of flammable vegetation into smaller blocks. This helps limit the spread of fires and can assist the emergency services by slowing or stopping outbreaks. Burning has a significant negative impact on peatland scores. Where a firebreak has been installed negative marks for burning will only be applied on the side where a fire occurred. Two types of fire breaks/ fuel breaks are supported in the Hen Harrier Programme:

- Grazed Fuel Breaks
- Willow Firebreaks

Grazed Fuel Breaks

These are used in upland habitats with high fire risk, e.g. areas with excessive Purple Moor Grass dominance/ tall Heather (average height > 30cm). As fire spreads fast through tall/ dry vegetation, the aim of this action is to create a barrier to the spread of fire by reducing the presence and height of flammable vegetation. It achieves this by using livestock to manage the vegetation along a planned fuel break connecting less flammable areas. It may also be of assistance to the fire services in fighting wild fire outbreaks. A grazed fuel break creates a strip of short vegetation with minimal litter in the winter. This reduces the dominance of flammable vegetation and connects less vulnerable areas, e.g. lakes/ grasslands, woodlands.

A grazed fuel break must:

- be least 30m wide on flat terrain. On slopes the width must be increased, the steeper the slope the wider the firebreak;
- be fenced off with at least a temporary electric fence from June 1st until July 31st.
- be grazed by cattle or equines during the period June 1st to July 31st. Stocking rate is dependent on terrain but must be adequate to reduce the height of Purple Moor Grass to <15cm and to disperse litter from previous growing seasons;
- grazing can continue beyond July 31st if required to keep vegetation height short. Water for livestock must be available during the grazing period.

- Feed blocks to support animals diet can be provided. Vegetation can be strimmed/ flail cut from September to February; and,
- be cleared of gorse and other flammable vegetation.

Willow Firebreak

The aim of this action is to create a barrier to the spread of spring wildfires. This is achieved by establishing a thick Willow Hedge that can shade out Purple Moor Grass under its canopy. Rising sap in the Willow in spring makes it less vulnerable to burning. A total of 60% of the payment is made in the year of planting, with the remaining 40% two years later following certification of establishment. This action may not be available on SAC designated sites. Please discuss with your Project Officer.

Willow Firebreak locations must be on thin peats <50 cm, Willow rarely thrives on deeper peat. They should not be planted within 4m of a stream. This is to prevent trees from completely shading the channel. They should connect areas less vulnerable to wildfire, e.g. Waterbodies, wet grassland. A Willow firebreak is planted using willow species known to be doing well in the area. It can be planted using cuttings or rooted plants. To certify planting the willow firebreak must have:

- 8 plants or 10 cuttings/m in a double row. Hormone rooting powder can be used to aid rooting of cuttings;
- small amounts of a low Nitrogen fertiliser, i.e. 7:6:17 can be used to aid establishment;

- rows to be 1m apart;
- the new Firebreak needs to be protected from stock by a permanent post and wire fence (3 strands of barbed wire. If the site is grazed by sheep a sheep wire fence topped with a single strand of barbed wire must be used). If this fence has been grant aided under the TAMS scheme the payment rate will be reduced accordingly; and,
- gorse must be removed along the line of the fire break.

Aftercare

The young trees must be protected from excessive competition with grasses and other plants for two years after planting. Failed plants must be replaced, and the protective fence maintained in a stockproof condition. Young Willow Plants must be coppiced after one growing season. Plants should be cut back to no higher than 15 cm.

Certification of Establishment

To certify establishment:

- there must be at least 6 willow plants established per metre;
- 90% of willow plants must have been coppiced;
- no gaps greater than 1m;
- stockproof protective fencing must be in position and fit for purpose; and,
- no gorse may be present along the line of the fire break.

The locations of fire breaks/fuel breaks should be mapped on GLAM. Certification of establishment can be delayed until three years after planting if this is required to reach the standard required for certification that the firebreak has established. This is only permitted if it does not extend beyond the participants contract period.

11. FLAIL MOWING

Flail mowing or mulching may be the only practical method of opening up sites that are at risk of abandonment. It is a useful technique for bringing abandoned and overgrown sites back into management. To be effective it must be followed up with grazing. It is not available for the control of very dense rushes on GLAS farms due to dual payment issues. Flail mowing is preferable to the use of an excavator as disturbance to the soil profile is minimal. It is safer than burning and promotes rapid recovery of vegetation as cut material is reduced to fine particles.

The nature of the terrain (slope, access, the presence of gullies and rocks, and so forth) will dictate the specific machinery to be used. Flail mowing of broadly rectangular or square patches, is not desirable. Maximising the amount of edge helps to disperse grazing pressure and reduce the risk of localised overgrazing of the regenerating scrub or heather. Patches should vary in size and be elongated or convoluted in shape.

Flail mowing is paid on a linear basis representing a strip from 2 - 10 m wide. Seasonal restrictions on the works period will apply. Approval may not be granted in particularly sensitive areas.

Flail Mowing of Heather

Vigorous heather stands cut in February or late March may recover and flower in the August after cutting. Late winter/spring cutting is preferred over late autumn/early winter as this reduces desiccation damage, allows much better regeneration, and reduces risk of erosion of soils exposed to winter conditions. Flail mowing may be used to create fire breaks in heather before controlled burning.

12. SAFER NESTING SITES

The aim of this supporting action is to promote vegetation succession towards tall Heather/ scrub with the potential to provide nesting sites for Hen Harrier and other ground nesting birds. Safer nesting sites are:

- less vulnerable to predators – the most successful nesting areas are on tall Heather sites remote from forestry;
- easier to protect from predators; and,
- possible installation of a predator proof fence if Hen Harrier start to use the site.

Safer Nesting Sites delivered must:

- be at least 250m from coniferous forestry. Selected sites must have some scrub or heather present and be located on a slope;

- be at least 50m from a hedge;
- be at least 250 from buildings;
- be fenced off to manage livestock access. Fencing must be with permanent post and wire fences;
- If sheep are present on the farm, then fencing must be with permanent posts with sheep wire; and,
- have no access for livestock outside of the September/October period. Limited autumn access is permitted provided it does not interfere with the desired succession of vegetation. Emergent trees greater than 4m tall must be coppiced in the September -February period to prevent succession towards secondary woodland.

13. CULVERTS

Culverts can be used to allow livestock or people to access land without fording streams or drains. It considerably reduces the risk of silt, sediment and/or nutrients affecting valuable aquatic habitats and in turn protects species like salmon, trout, lamprey, freshwater pearl mussel and other invertebrates also in the river system.

This measure is available on non-fish bearing streams and land drains. It is not available on NHA or SAC designated sites or watercourses.

The construction, maintenance and use of culverts, particularly for the transit of vehicles is the responsibility of the participant.

The approval of this action does not imply that the site is safe for the constructions of a culvert. Pipes of suitable diameter to carry the expected peak flow of water on the site should be selected.

Culvert Type 1 (plastic or concrete)

Medium culvert, 2.5m-3m wide using a 0.45m pipe plus hardcore on top. This would be used for standard fields connections where the channels are not very deep, and water may dry up in the channel over the summer months

Culvert Type 2 (plastic or concrete)

Large culvert, 3m-6m wide using 0.60m pipe plus hardcore on top. This would be used for connecting fields where there is a considerable drop, the channels are deep, and the watercourse is fast flowing

14. BORD BIA QUALITY ASSURANCE

Bord Bia quality assurance is required to sell animals for slaughter. By having this certification the farmer has extra options of the sale of livestock from the farm. Obtaining Bord Bia quality assurance is an investment in the farm enterprise. To be eligible for this action the farmer must not have Bord Bia quality assurance at the time of the approval of the annual works plan. The certification is supported with 50% co-funding.

15. CONTROLLED BURNING

Poorly planned or executed burning can cause long-term damage and negative impacts on vegetation, invertebrates, soil structure and hydrology, water quality and carbon storage. Uncontrolled and illegal fires can potentially damage large areas of scrub and peatland habitats supporting nesting and foraging Hen Harrier. Uncontrolled burning is prohibited and could lead to penalties under the ANC and BPS schemes. This may also result in low habitat scores in the Hen Harrier Programme.

Appropriate grazing regimes should be implemented first and foremost as a fire and fuel management approach. Controlled burning is only available as a bespoke measure through the local actions grants. Please contact the Project Manager for further details.

16. MULTI-PURPOSE PONDS

This action is to provide ponds that can serve to supply water for fire fighting operations in the vicinity. These ponds will also function as wildlife habitats and potentially supply water troughs on nearby lands.

A capital payment to cover the cost of installation and an annual maintenance payment will be made. This action will be 100% funded. Both the capital and the maintenance payment will be in addition to the participants allowance for supporting actions.

Priority will be given to locations remote from existing water supplies and with a large proportion of fire vulnerable landscapes in the vicinity. This action is not available on SAC designated lands or on lands with archaeological sites. Seasonal restrictions may be required to reduce the risk of disturbance to wildlife. Detailed specifications will be provided to participants who apply for this action.



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