

# **Towards sustainably and environmentally sound water management solutions for farms located in close proximity to river catchments**

**Guide to sustainable riparian and water quality management on farms in  
close proximity to riverine SACs**

**Action A2  
LIFE09 NAT/IE/000220 Blackwater SAMOK**

**I.R.D. Duhallow Ltd.**



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## Introduction

The River Allow is a designated SAC, as it is a habitat for several EU Habitats Directive Annex II listed species including the Freshwater Pearl Mussel (*Margaritifera margaritifera*), Atlantic Salmon (*Salmo salar*), Otter (*Lutra lutra*), and the EU Birds Directive Annex I listed species, the Kingfisher (*Alcedo atthis*). The protection and enhancement of the water environment for these species is a national priority.

The designated SAC areas extend from as little as a few metres up to 30m out from the river bank. Land management practices within the SAC itself, and the wider river catchment are critical for protecting the species mentioned above. The proposed national GLAS Scheme has a wide range of agri-environmental measures to meet national objectives. The measures, if implemented in the Allow catchment, would be of benefit but they do not meet the priority objectives for catchment management, and in particular the standards needed for fresh water pearl mussel. This scheme is therefore designed to meet the specific issues that need to be addressed by farmers within the entire catchment to meet the water quality standards required for pearl mussel in the Allow catchment. These measures also meet, and indeed exceed the requirements for salmon. Two additional measures are recommended to enhance the habitat for otter and kingfisher.

The primary land use within the catchment is for agriculture with most farmers involved in dairy enterprises. Soils are generally heavy making them vulnerable to poaching and increased surface runoff. Farm size is generally small with the majority of active farmers owning and managing 20 to 35 hectares. Survival on small farms demands intensive production and has resulted in average stocking rates of 1.5 – 1.7 livestock units per ha. While this stocking rate would not be viewed as intensive on free draining soils in other parts of Ireland, it is considered intensive in the Allow due to the relatively short grazing season, and restricted potential for hay/silage conservation.

Fulfilling the contrasting objectives of protecting excellent water quality, while stocking land to its optimum agronomic potential is challenging. The proposed measures are potentially demanding on farmers, and many exceed the standards required by national legislation and codes of good practice. This scheme proposes alternative measures to meet specific issues identified within the Allow catchment. The success of the proposal requires a high level of participation by farmers within the catchment, including those on first order streams. It is therefore recommended that all farmers within the catchment be encouraged to join the scheme. Farmers should be incentivised by offering them the opportunity to undertake voluntary work to receive the maximum payment of €7,000, which is payable when farmers adopt particularly demanding actions. The measures have been developed through the IRD Duhallow LIFE Project. The scheme was developed in partnership with River Allow catchment farmers and part funded through INTERREG TRAP and EU LIFE.

Success of this scheme will be highly dependent on ongoing liaison and consultation with a catchment manager.

## **Measures**

The water protection measures, some of which have not been previously identified, are specific to address the pressures within the Allow catchment. The measures outlined are purely voluntary. Individual farmers, in association with their planner, may select the measures which they consider are most suited to their farming system. The planner must endeavour to ensure that measures adopted within farms and sub-catchments will achieve the objective of improving water quality. A fully integrated approach is required to ensure that if issues on one farm are not fully addressed, then the measures adopted on neighbouring farms will help to mitigate the run-off from that farm. The individual programmes will therefore become a community or local agri -environment area programme.

The proposed locally led scheme is designed to enable each participant to apply for as many measures as they wish, but they must apply for a minimum of two measures to qualify for entry.

<b>Pressure</b>	<b>Impact</b>	<b>Solution</b>
Cow roadways	Conduit for soiled water to drains and main allow channel	Cow road design and camber
Soil damage due to animal traffic	Creation of conditions for soil to be eroded or compacted	Better design of grazing paddocks
Riparian margins	Soil loss from riparian margins and loss of flora and fauna diversity	Fencing to exclude livestock and enable natural regeneration
Water coming off land	Nutrients and silt are transported in both surface runoff and subsurface flow through land and natural drainage.	Divert to natural/constructed wetland
Watercourse transport	Transport of silt and nutrients	Provision of silt traps and programmed watercourse maintenance
Livestock stocking rate	Higher stocking rates result in increased nutrient usage and production of organic wastes.	Reduce stocking rate.
Production of organic wastes during the housing period	Storage facilities for extended housing periods caused by early winters/ late springs	Provide a storage buffer either centrally or on individual farms.

<b>Pressure</b>	<b>Impact</b>	<b>Solution</b>
Land characteristics	Drainage, slope, proximity to surface water and nutrient load	Minimise use of high risk land during high risk periods
Nutrient application and grassland management.	Intensive use increases risk to waters.	Management of nutrients and stocking rates in accordance with grassland quality
Invasive species	Invasive species reduce native biodiversity	Implement management and control measures
Management of water channel	Lack of suitable breeding sites for otter	Provide otter boxes
Management of water channel	Lack of suitable breeding sites for kingfisher	Create suitable nesting sites or provide kingfisher boxes
Forage area for birds	Land reclamation and intensive agriculture	Establish wild bird cover
Evolving environmental management	Lack of knowledge and need to react to changing circumstances	Regular meetings, progress review and planning.

## Measure 1

### Farm roadways

#### Objective:

Poorly designed or maintained farm roadways can act as a channel for water resulting in both silt and nutrient losses to surface waters. Within the Allow river catchment there are numerous cow farm roadways either under field level or with shallow banks on either side of the road resulting in water being channelled along the roadway often to surface drains. This is a particularly serious issue on the heavy soil types of the Allow as all accumulations of water are likely to be subject to surface runoff.

#### Specification:

Requirements for new roadways and upgrading of existing roadways: -

1. Provide a crossfall of 1:20 to 1: 30 to one side or to both sides depending on the slope of the land (a fall to one side is easier to do). On existing roadways with inadequate crossfall either resurface to provide the crossfall or provide channels or ramps at 20 - 25 m intervals to divert all water to land.
2. Ensure that the roadway has at least 20 to 25 cm of hard-core material and 7 - 10 cm of fine material with largest pebble size of 5 – 6 mm. Use geotextile on new roadways where the foundation is not firm.
3. Provide adequate road width. Road width depends mainly on cow numbers, typically 3m for 50 cows, 4m for 100 cows and 5.5m for 250 cows; cow tracks of 0.6 to 1.8 m may be used to service long narrow paddocks. The roadway widths should be increased by 1m for roadways close to the yard.
4. Road slope should not exceed 3:1. Where steep areas are necessary use ramps or channels to divert water. Widen roadway at corners and at t-junctions,
5. Drinking points/troughs shall not be located adjoining farm roadways.
6. Place a kerb (about 15cm wide and 20 cm high) at the entrance to the collecting yard or other concrete section of the roadway.
7. Roadway fencing should be at 45cm from the road.
8. Avoid locating roadways near hedgerows and if necessary place the roadway at the southern side of the roadway. New hedgerow planting (if necessary) should also be on the southern side.

#### Maintenance requirements for farm roadways

1. According as solid material beginning to accumulate on the edges of the roadway remove it to ensure the runoff of water from the roadway is continuous and unrestricted along the edge of the roadway.
2. Repair damage to roadways as required.
3. Where ramps are used at 20 – 25 m intervals as described above to divert rainfall they should be cleaned at regular intervals.

## Measure 2

### **Redesign/design of grazing paddocks**

#### **Objective:**

Minimise animal traffic so as to reduce damage to soil and provide a design that will reduce the risk of erosion of soil

#### **Specification:**

1. Paddock length to be more than twice that of roadway frontage on heavy soils or three times it on free draining soils
2. Minimum of two openings into each paddock
3. Drinking troughs to be located away from paddock entrances and to facilitate spring and autumn grass management.
4. Entrances and gates to be located at high points of paddocks

#### **Maintenance requirements for paddocks:**

1. Alternate paddock openings so as to minimise damage to soil.
2. Keep openings free of mud by use of stone/ other suitable material
3. Graze inside sections of paddocks first in the event of dividing paddocks
4. Replace stakes and wire as necessary.

## Measure 3

### **Riparian Margins**

#### **Objective:**

The objective of this measure is to protect the river by creating linear buffer zones where reduced agricultural activity takes place. This will stabilise riverbanks and intercept nutrients transported in overland flow. The development of these zones will also provide suitable habitat for flora and fauna that sustain food webs important in the river ecosystem.

The measure is targeted at delivering on the environmental themes of water quality and biodiversity.

#### **Specification:**

The zone must extend 30 to 50 metres for lands on the main channel and a minimum of 3 metres on the minor tributary streams and drains with direct discharge to the river Allow. For every 1m of main channel length a minimum of 1m of the highest risk tributary stream/drain shall also be included under this measure. The main channel shall be fenced a minimum of 3m to permanently exclude stock. The 30 to 50 m zone outside that shall be fenced with a gated stock-proofed fence. This area shall be grazed, cut for hay/silage or topped but no fertiliser applied to it.

The areas must be permanently fenced by the end of year one to exclude livestock but with suitable entry points by hung gate/s to facilitate machine entry for maintenance work and stiles for access to fishing. Where electrified fencing is used it shall be maintained as necessary to ensure that vegetation is cut back to avoid loss of electrical current from the fence. Areas designated under this measure shall be included as forage area under Basic Payment Scheme.

Riparian zones cannot be established on scrub, woodland or other areas not currently under agricultural use.

#### **Maintenance requirements for riparian zones:**

1. Allow vegetation to develop naturally within the zone - do not apply fertiliser or pesticide except with the permission of the NPWS.
2. Vegetation such as alder and scrub should be controlled to prevent closure across the channel canopy.
3. Tree planting on up to 50% of the 3m+ riparian zone, from which animals are permanently excluded, with the following species is recommended - ash, beech, birch, blackthorn, elder, hazel, oak, whitethorn or willow. Conifers may not be planted.

**Note:** Inland Fisheries Ireland staff must be allowed access to riparian zones to inspect and carry out such works as is deemed necessary by them.

## **Control of water coming off/from farmland**

It is estimated that up to 90% of effective rainfall in the Allow river catchment ends up as surface flow. Water travelling from land to water carries both nutrients and sediment. Water movement is either overland flow or subsurface flow. Overland flow is general described as runoff. Rate of flow is determined by numerous factors including the intensity of rainfall events soil permeability and slope. Subsurface flow is flow in saturated zones just below the soil surface or movement of water to greater depths from which it is carried in channels, either natural or manmade, to either surface water or groundwater. Within the Allow river catchment a considerable amount of land has been drained with pipes backfilled with stone and directed to surface drainage. Research has shown that on heavy soils drainage systems carry nutrients. Losses of nutrients through such systems is likely to be greatest in the early part of the growing season following nutrient application. Discharge of water from drainage systems will enrich the receiving water. Water which has moved downwards and which is not trapped in drainage systems may enter groundwater. Groundwater recharges surface water and may contain nutrients, particularly nitrogen. Loss of nutrients from land to water is most significant when flow in the main water channel is low as concentrations will be increased.

### **Objective:**

Reduce transport, in the early part of the growing season, of silt and nutrients from land by: -

- a) Trapping and diverting water either to existing wetland areas or to modified wetland areas from which the water can be discharged to either the main river channel or tributary streams.
- b) Water attenuation and flood adaptation
- c) Soil retention and aeration

### **Specification for wetland areas:**

1. Connect all land drains to one or more main drains to carry all drainage water to a wetland area.
2. The wetland area shall be sized so as to provide a residency of at least 7 days so as to remove particulates, organic matter and retain nutrients.
3. The wetland area may be provided on the farmers own land or on that of an adjoining neighbour.
4. Preference shall be given to natural wetland areas and or lands which can be adapted with minor works to provide containment of water.
5. Lands which are presently under scrub or forestry may be considered as suited for the purpose.

## **Control of water coming off/from farmland**

### **Maintenance requirements for wetland areas:**

1. Silt shall be removed at intervals as required. It is likely that the period for such removal may extend up to 15 – 20 years.
2. Discharge from the wetland area shall be monitored annually to find the quantity of suspended solids being discharged.

### **Soil Compaction**

#### **Specification for soil aeration:**

1. Where shallow compaction of land is identified fields shall be aerated when soil is moisture is at a suitable level.
2. Direction of travel shall be parallel to the main water channels in the field.

#### **Maintenance requirements for soil aeration:**

1. Minimise animal and machinery traffic when soils are wet.
2. Direction of travel should be parallel to contours where possible.

## Measure 5

### **Watercourse management**

#### **Objective:**

Watercourses must be maintained so as to provide a suitable habitat for freshwater pearl mussel. This necessitates low nutrient concentrations and minimal loss of soil/silt from land to water. First order streams and drains are a significant contributor to the total loads but due to their nature require somewhat different management to the main channel. The principal objective is to minimise runoff of nutrients to the channels and to minimise/avoid animals using them as a source of drinking water. On the main channel soil erosion and losses of soil from the bank are the major problems.

#### **Specification for watercourse management:**

- a. Drains and minor streams
  - i. Provide and maintain sediment traps
  - ii. Fence at least 1.5 m from top of bank
  - iii. Plant native trees where river bank is susceptible to erosion.
  - iv. Keep drains and streams free flowing with planned maintenance to keep the base flow of the channel in as narrow a width as is possible.
  - v. Remove accumulated sediment each summer (weather permitting).
  - vi. Direct field drains to either constructed or natural wetland areas so as to avoid direct discharge to the main channel.
  - vii. Pesticide shall not be sprayed within 2 metres of watercourses unless registered for aquatic use.
  
- b. Main channel
  - i. Fence at least 3 m from top of bank
  - ii. Plant native trees where (if) bank is subject to erosion.
  - iii. Carry out planned maintenance of vegetation on river bank so as to remove /prune trees that are at risk of falling into the river.
  - iv. Water sources for animals
  - v. Pesticide shall not be sprayed within 2 metres of watercourses unless registered for aquatic use.
  
- c. All animals shall be excluded from drinking in catchment watercourses
  - i. Every field shall have animal access to at least one drinking point.
  - ii. Provision of drinking troughs.
  - iii. Provision of pasture (nose) pumps.

## Measure 6

### **Livestock management**

#### **Objective:**

Maintain stocking rate at a sustainable level so that agricultural practices will not restrict future production potential of the land or do damage to water quality.

#### **Specification:**

1. The current national stocking rate limit of 170kg/ha of organic nitrogen produced by livestock on a holding shall be the upper limit unless a derogation to 250 kg/ha is granted and allows for slurry export in order to achieve that. Farmers availing of this measure shall not exceed 170 kg/ ha organic nitrogen.
2. The farmer must reduce the stocking rate below the national limit without slurry export and below the level on the farm in 2015.

#### **Maintenance requirements for livestock management:**

1. Manage stocking rate during key periods in priority sensitive areas
2. Manage livestock type/weight in vulnerable zones
3. Grazing/rotation periods to reflect prevailing conditions
4. Avoidance of stock feeding from troughs/round feeders
5. Ensure compliance with national 170Kg/ha limit during plan

## Measure 7

### **Enhanced Nutrient Management**

**Objective:**

Provide slurry storage facilities in excess of those required under current regulations.

**Specification:**

1. Farmers shall provide slurry storage in excess of their 16-week requirement and utilise it so as to extend their storage to a minimum of 18 weeks.
2. The addition slurry storage over the 16-week minimum shall be used so as to reduce their own need to spread slurry early in the spring and/or to take in slurry from neighbouring farmers within the catchment.
3. All slurry imported for storage shall be spread on the holding to which it is imported or exported to tillage lands.
4. The surplus storage may be provided by constructing additional storage facilities or by reducing their own stock numbers.

**Maintenance requirements for enhanced nutrient management:**

1. Provide adequate storage for slurry and livestock manure
2. Extend storage capacity to 18 weeks (*from current 16 weeks*)
3. Reduce housed livestock numbers
4. Optimize nutrient recycling to reduce bagged fertiliser

## Measure 8

### Land risk assessment

#### Objective:

Reduce phosphorus losses from land to water by determining which fields present the least risk to waters and prioritise them for nutrient application during high risk periods.

#### Specification for land risk assessment:

Nutrient losses from the catchment will be determined by the following risk factors

1. Soil drainage characteristics
2. Land drained by subsurface drains
3. Land slope
4. Proximity to surface waters
5. Pathway to surface water.
6. Nutrient application recommended as part of NMP

**Table 1** Risk factors for losses of nutrients and silt to the river Allow with simplified scoring system

Factor	Risk	Score
Soil drainage – runoff risk	High	2
	Low	1
Subsurface drains	Present	2
	None present	0
Land slope	Steep	2
	Gradual to level	1
Field proximity to surface water	Within field	2
	Not within field	1
Pathway to surface water	Obvious during heavy rainfall	2
	Not obvious during heavy rainfall	1
Nutrient application	Recommended	0
	Not recommended	10

#### Actions required following land risk assessment:

Score each field using criteria set out in Table 1 and prioritise nutrient application to fields with lowest score during high risk periods: -

1. Early spring.
2. Soils close to moisture saturation point.
3. Periods when river levels are low and forecast for heavy downpours of rain.

*No nutrient application to fields which exceed a score of 10.*

## Measure 9

### **Nutrient application and grassland management**

#### **Objective:**

Ensure that nutrient applications are appropriate and that environmental risk factors are considered before finalising the fertilisation programme.

#### **Specification for nutrient application and grassland management**

1. Slurry spreading
  - a. Use wide tyres on vacuum tankers and operate at lowest acceptable tyre pressure.
  - b. Use umbilical system for slurry spreading.
  - c. Maintain a minimum buffer zone of 10 m from watercourses for all fertiliser and slurry applications.
  - d. Avoid slurry applications when soil moisture is close to field capacity and rain is forecast.
  - e. Avoid slurry applications if rain is forecast when the main channel flow is low.
  - f. Provide an earthen bund between watercourses and agricultural land to minimise runoff if spreading to take place when main channel flow is low.
2. Chemical fertiliser management
  - a. All phosphorus (P) applications to be in accordance with recent soil samples
  - b. Reduce target P index and P applications if stocking rate is low or there where very little ryegrass in the sward.
  - c. Reduce nitrogen (N) applications if stocking rate is low or there where very little ryegrass in the sward.
  - d. Incorporate P into seedbed when reseeding.
  - e. Avoid chemical N and P applications when soil moisture is close to field capacity and rain is forecast.
  - f. Provide an earthen bund between watercourses and agricultural land to minimise runoff.
  - g. Driving direction of machinery should be parallel to water channels.
  - h. All fertiliser spreaders shall be fitted with a deflector when spreading fertiliser on the first pass with a spreader adjacent to an open watercourse
3. Grassland management
  - a. Reseeding should take place in spring or early summer.
  - b. Grazing paddocks should be reseeded at least once every 10 years
  - c. Reseeding to be carried out using minimum tillage system
  - d. Stocking rate should be managed in accordance soil moisture and with grass supply.

*Grassland reseeding within SAC areas are activities requiring consent.*

## Measure 10

### **Control of invasive species**

**Objective:**

Reduce the population of mink and eliminate invasive species from the river catchment

**Specification for control of mink and invasive species:**

Place mink traps in suitable locations in the vicinity of the main channel and tributary streams. Traps must be inspected at regular intervals and all mink found shall be destroyed humanely.

**Specification for non-native invasive plant species:**

Himalayan Balsam and Japanese Knotweed is present in some areas within the catchment. The Balsam shall be controlled by hand rouging and the Knotweed sprayed with glyphosate. Glyphosate usage is to be strictly managed in accordance with label restrictions and is not to be used within the vicinity of surface water.

## Provision of Otter boxes

### Objective:

Enhance the river environment for otters. In recent years, natural otter holt sites have become a scarcity due to the clearing of trees along the river banks. Otters tend to live in bodies of waters near to woodland or wetland so construction should be prioritised to those areas.

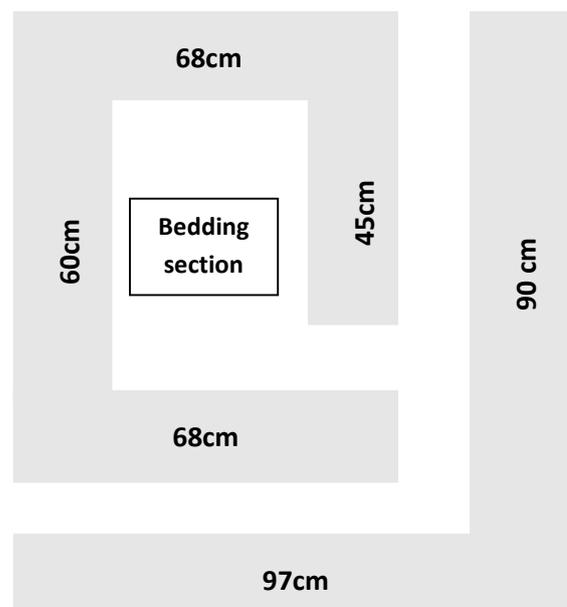
### Specification:

Areas with little natural cover are ideal for constructing artificial holts. As otters' habitats are generally near woodland and wetlands, the holts should be built where there will be minimal disturbances from humans, livestock and animals such as dogs. To ensure the safety of the otter from livestock the area around the holt should be fenced off, if possible

As the name suggest a log pile holt is can literally be a pile of logs, it can be built with different sections with a roof. Otter holts may also provide good habitats for birds and insects, so this beneficial for more than just the otter! To ensure that no logs are washed away in floodwater, the holt may need to be secured by wire and stakes. Natural otter holts are easy to enter, dark and free from drafts, when building the artificial holt, we need to try mimic the otters' natural holt. Live willow will grow and provide extra benefit.

To provide a good habitat for the otter either plants local tree species or leave shrubbery to cover naturally. This provides the otter with an excellent habitat in the short term and most importantly in the long term too.

**Figure 1:** Diagram of floor plan for otter holt with approximate dimensions



**Installation of otter holt:**

To begin mark out the shape of the holt by placing logs of roughly 35cm in diameter on the ground. There is a diagram below that can be used as an example. To secure the logs in place use stakes of 3-10cm in diameter. To allow the otters to move freely within the holt the exits and hallways should be roughly 25cm wide. When measuring the size of the internal section, don't forget to include the width of the logs. One exit should face toward dry land and the other towards the water. The walls of the holt should be 45cm above ground and completely stable. Once the walls have been constructed to the guidelines. The roof must now be put in place. Place branches 3-10cm in diameter across the walls to form a roof, if required these branches may be nailed into place. No light should enter the bedding section so cover the roof with brash until no light enters. Ensure that the roof is waterproof and stable. Tie down the branches with wires and stakes. Plywood may be used in the construction.

*All works within designated SAC areas must be approved by National Parks and Wildlife and works within the river must be approved by both National Parks and Wildlife and Inland Fisheries Ireland.*

## **Provision of Kingfisher boxes**

### **Objective:**

Provide nesting boxes in suitable locations on the river Allow where it is likely that they will be used by kingfishers. Nest site creation will require NPWS permission and that in the case of built structures some councils may need planning permission.

### **1. Habitat Identification**

Any prospective and suitable site should generally be quiet, remote and well-hidden with as little likely disturbance as possible.

The Kingfisher requirements for a suitable nest site include pollution free, slow and fairly deep running water with steep, vertical banks clear of vegetation. Each pair will normally hold a territory of approximately 1km so nest banks should be spaced at approximately this distance if more than one is required.

The nest hole will need to be around 1m above normal expected summer water levels and would be excavated by the birds approximately 1m into the bank leading to a nest chamber a further 15-100cm long. There should also be around 500mm of soil cover over the chamber to help prevent predation. Ideally the bank will have a north east aspect.

Kingfishers are very prone to disturbance and therefore agricultural land where livestock have access to the bank area is likely to prove unsuitable in that it is likely to put birds off from nesting unless the area of the nest site can be suitably fenced off and protected.

Bank vegetation in the form of overhanging trees which may have impeded the flight of birds. In light of this it may have to be considered that some clearance of such vegetation will likely be necessary.

### **2. Site work**

Obviously it would be preferable for the site, once identified and cleared, to be left in the hope that the birds will carry out the nest excavation naturally but other work may be necessary to encourage them to do so. Once a site is located and cleared of vegetation there are a number of options in the construction of the nest.

#### **Option 1 – Construction of raised banks**

If naturally occurring banks are found not to be high enough relative to the normal summer water levels the bank level may be raised by means of layering and compacting suitable soils as described. Whether natural or raised bank is used it should be remembered that some natural erosion will occur over time and may require some attention season to season.

### **Option 2** – Creation of constructed tunnels and nest chambers

Tunnels and chambers can be constructed in a number of materials. Tunnels, which should be inclined at 15 degrees to allow for drainage, can be of the plastic drainpipe variety with a diameter of 50mm. The pipe should be cut through over its length so as to provide a soil floor on which the bird's feet can gain purchase. Tunnels can also be bored into suitable banks and left to encourage the birds who, if finding the location to their liking will excavate their own nest chamber.

Alternatively, pre-formed tunnels can be purchased at a cost of around €70 - €120 per unit depending on whether an inspection/cleaning facility is required. See contact list for supplier. If using a plastic or pre-formed tunnel the entrance end should be pushed approximately 100mm behind the bank face to both help camouflage and prevent it from sticking out if there is a small earth fall.

### **Option 3** – Construction of built nest banks

Built structures have been successful but obviously cost may be a restricting factor in some cases. Such structures can be of a more permanent design as specified in 'Best Practice Guidelines - Artificial Bank Creation for Sand Martins and Kingfishers' put together by Laura Hopkins of the UK Environment Agency

Finally, it is worth considering that observation of the nest site, once in use, may well disturb the birds and cause them to abandon a nest destroying all the hard work in creating it! With this in mind some form of simple hide is well worth thinking about to prevent such an occurrence.

Don't forget that the Kingfisher, *Alcedo atthis*, is a Schedule 1 species and as such is afforded the highest level of protection. All advice should be sought from NPWS etc prior to carrying out initial investigations to prevent disturbance to any birds already making use of the system!

*All works to be done in consultation with IRD Duhallow.*

#### References:

1. **Assessment of the distribution and abundance of Kingfisher *Alcedo atthis* and other riparian birds on six SAC river systems in Ireland**

Prepared by Sinéad Cummins, Jennifer Fisher, Ruth Gaj McKeever, Laura McNaghten & Olivia Crowe

A report commissioned by the National Parks and Wildlife Service and prepared by BirdWatch Ireland (June 2010)

2. **Best Practice Guidelines - Artificial Bank Creation for Sand Martins and Kingfishers**

**Contacts and useful addresses:**

**Preformed nest chambers:**

Alana Ecology.  
The Old Primary School,  
Church Street,  
Bishops Castle,  
Shropshire,  
SY9 5AE,  
UK  
Tel: 01588630173  
E-mail - [info@alanaeco.net](mailto:info@alanaeco.net)  
Website - [www.alanaeco.net](http://www.alanaeco.net)

**Cork BWI branch:**

Contact: Paul Moore

Tel: 087 6908108

E-mail: [paulmoore01@eircom.net](mailto:paulmoore01@eircom.net)

Website: [www.birdwatchcork.com](http://www.birdwatchcork.com)

**NPWS:**

7 Ely Place,

Dublin 2,

Tel: 01 8882000 – LoCall 1890 202 021

Website: [www.npws.ie](http://www.npws.ie)

E-mail: [natureconservation@environ.ie](mailto:natureconservation@environ.ie)

**South Western Region (West Cork & Kerry)**

Regional Office: (064) 667 0141

Regional Manager: (064) 667 0142

Deputy Regional Manager: (064) 667 0143

District Conservation Officer, (South & West Cork and South & West Kerry): (028) 37 347

## Measure 13

### **Establishment of Wild Bird Cover**

**Objective:**

Provide a suitable habitat and feeding area for wild birds

**Specification:**

As outlined in the GLAS Scheme Specifications

## Measure 14

### **Training and development of Allow Catchment Management Plan (ACMP)**

**Objective:**

Assess the implementation of the ACMP, identify strengths and weaknesses and revise the plan on an ongoing basis so as to further enhance water quality.

**Specification:**

1. Attend and contribute to a minimum of 6 locally held meetings per year
2. Provide an annual report of activities on each farm.

## Appendix 1

### Specification for silt traps:

1. Silt traps shall consist of a square timber frame sized to meet the width of the drain or channel into which it is to be placed. A polypropylene bag of 0.5 – 1m<sup>2</sup> shall be attached to the inside of the frame by means of clasps which can be readily opened so as to release the bag from the frame.
2. The base of the drain shall be excavated to accommodate the frame and the bag. The frame is then positioned into the drain bag with the top of the frame flush with the drain bed.
3. The bag should then be attached securely to the inside of the frame.
4. An object such as a Christmas tree shall be placed over the stream and to the downstream end of the timber frame to create water turbulence when the level of the water rises in the drain.
5. Silt traps shall be placed in series of two within 10 – 20m of each

### Maintenance requirements for silt traps:

1. Silt shall be removed at 4 - 8 week intervals as required during the growing season by releasing the clasps from the timber frame and lifting the bag with a tractor front loader (or similar).
2. The material which is removed make to stockpiled on adjoining land until such time as is it is landspread upstream of the silt trap. Location of stockpile and of landspreading shall be protected from runback to the drain by land sloping away from the drain or by placing it at least 10 m from the drain.