

I.R.D. Duhallow Ltd.



LIFE09 NAT/IE/000220

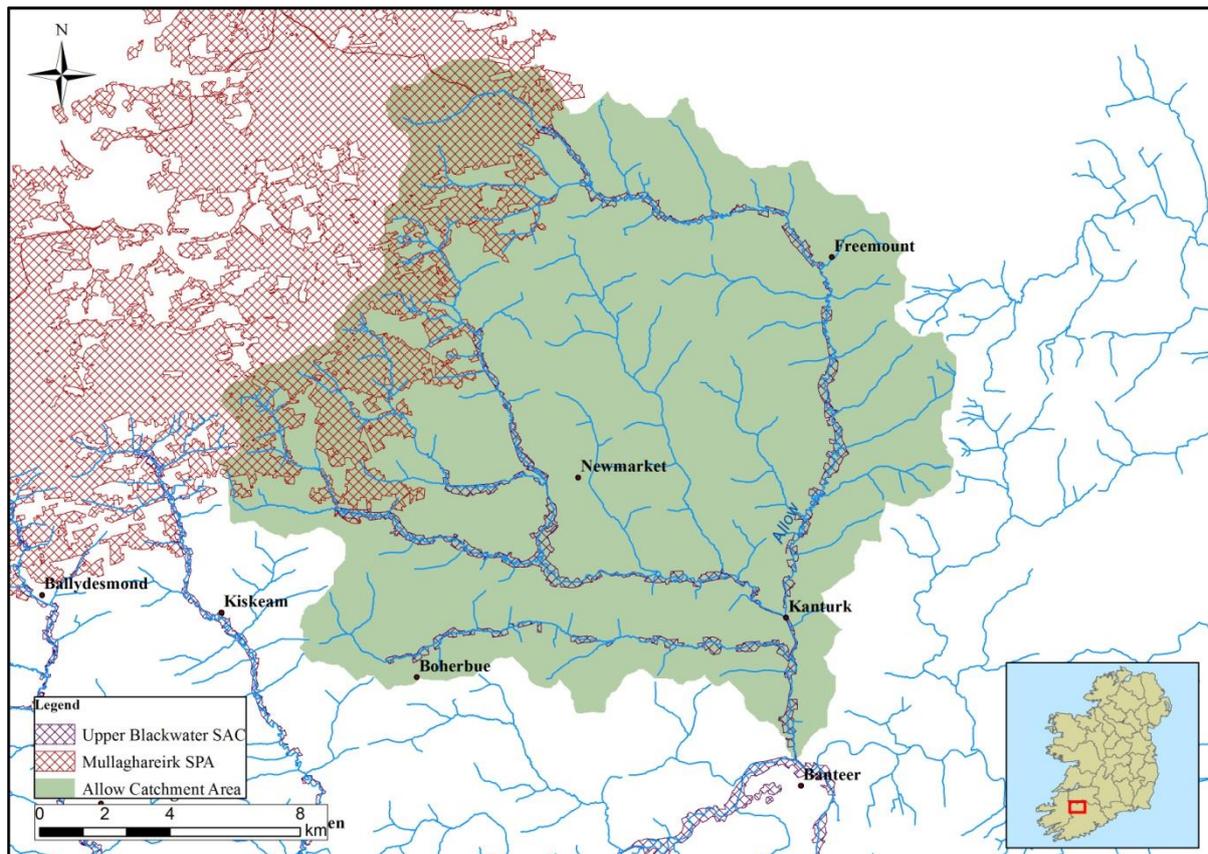
Blackwater SAMOK



After-LIFE Conservation Plan



*Restoration of the Upper Blackwater SAC for the Freshwater Pearl Mussel,
Atlantic Salmon, European Otter and Kingfisher*



Restoration of the Upper Blackwater SAC for the Freshwater Pearl Mussel, Atlantic Salmon, European Otter and Kingfisher - *LIFE09 NAT/IE/000220 Blackwater SAMOK*

Prepared by:

IRD DuhallowLIFE+ Project
Dr Fran Igoe (Project Coordinator)
Kieran Murphy (Project Officer)

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Newmarket, Co. Cork, Ireland

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List of Abbreviations

SAC	Special Area of Conservation
IRD	Integrated Resource Development
FPM	Freshwater Pearl Mussel
WFD	Water Framework Directive
ICM	Integrated Catchment Management
NPWS	National Parks and Wildlife Services
IFI	Inland Fisheries Ireland
SWAN	Sustainable Water Network
RSS	Rural Social Scheme
EPA	Environmental Protection Agency
WWTP	Wastewater Treatment Plant
DWTP	Drinking Water Treatment Plant
RACMG	River Allow Catchment Management Group

PREFACE

This project has improved riparian areas in the Upper Blackwater SAC (Allow River catchment) vulnerable to erosion from unsustainable land and water quality management and practices. This included 440m of bank protection works; 37.9km of riverbank fencing; provision of artificial otter holts, kingfisher and dipper nest boxes; 6.46 km of pruning and coppicing; 6.84 km of planting of exposed riverbank areas; 35km of Himalayan balsam removal; provision of alternative cattle drinking strategies and installation of silt traps, together with a comprehensive engagement and media awareness activities.

This After-LIFE conservation plan represents the final output of the project “**Restoration of the Upper River Blackwater SAC for the Freshwater Pearl Mussel, Atlantic Salmon, European Otter and Kingfisher**”. It provides a road map for the management of the site, post project completion, outlining the ongoing maintenance required and timeline involved. The key stakeholders have been identified and a framework structure put in place to facilitate the development of an integrated catchment management approach to the management of the River Allow. This has become the template nationally and identified as a successful model under the Water Framework Directive in Ireland.

Project History and Situation Analysis

Introduction

IRD Duhallow CLG, established in 1989 to promote the tourism potential of the rivers in Duhallow, has expanded over the years to become a rural development company delivering a range of national and EU programmes. The company administers LEADER and Local Development Programmes. In 2010, IRD Duhallow was successful in its bid for funding from the EU LIFE+ Programme targeting the Upper Blackwater River with various river restoration works. The total fund for the IRD DuhallowLIFE+ Project is €1,995,826 (46.88% of which is EC co-funding). The majority of the conservation works entailed in the project were directed at the River Allow catchment area.

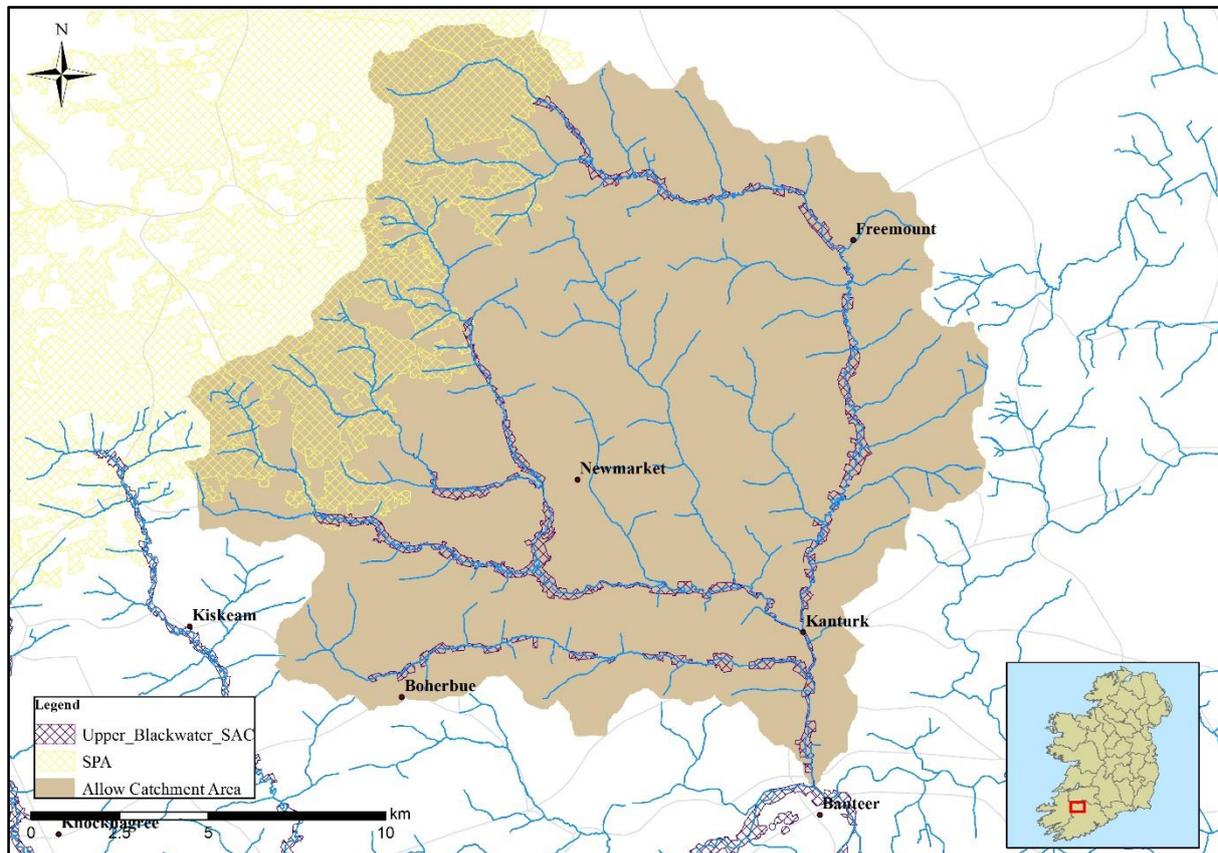


Figure 1 River Allow catchment area targeted by the DuhallowLIFE Project (LIFE09 NAT/IE/000220 Blackwater SAMOK)

The River Allow catchment forms part of the Upper Blackwater River Special Area of Conservation (Site Code: 002170). The site is important for a number of species including the Kingfisher, Freshwater Pearl Mussel, Atlantic Salmon and European Otter. The conservation status of the site has increasingly come under pressure. Agricultural intensification, afforestation practices and inadequate water management over recent decades have led to

increased levels of nutrient enrichment, siltation and pollution. Significant threats to the site and its species also come from years of decline of the riparian areas of the river. Examples of these include the spread of the invasive species Himalayan Balsam (*Impatiens glandulifera*), and overgrown bank vegetation causing excessive shade for the river. These issues, if left unchecked, would have serious repercussions on native vegetation, river bank stability, sedimentation of spawning beds and ultimately on the habitat and food sources of the Freshwater Pearl Mussel (*Margaritifera margaritifera*), Atlantic Salmon (*Salmo salar*), European Otter (*Lutra lutra*) and Kingfisher (*Alcedo atthis*).

Project Objectives

The main purpose of this EU LIFE Nature project was to bring about a sustained enhancement of the Upper Blackwater SAC by targeting the Freshwater Pearl Mussel, Atlantic Salmon, European Otter and Kingfisher. More specifically this was achieved by carrying out actions aimed at restoring the quality of the water, river bed and riparian zone.

Expected results for the DuhallowLIFE Project:

- Halt excessive siltation of pearl mussel and salmon habitat by restoring riparian areas vulnerable to erosion from unsustainable agricultural practices. This includes 440m of bank protection works; 6.46 km of pruning and coppicing; 6.84 km of planting of exposed riverbank areas; 6.0km of Himalayan Balsam removal (further survey work found that approximately 35km of riverbank was in need of Himalayan Balsam management); and provision of silt traps and constructed wetland in afforested areas where needed;
- Improvement of otter habitat over 27 km through installation of 10 otter holts and 28 brush bundles;
- Provision of 12 kingfisher nesting areas and 10 dipper nesting areas;
- Production and development of guidelines for the management of riparian zones for riverine SACs, a guide to sustainable riparian and water quality management in farms in close proximity to riverine SACs.
- Production of a habitat restoration plan for tributaries of the Upper Blackwater and a habitat restoration plan for the main Blackwater River

Project Actions and Targets Reached

Table 1 List of Project Actions and targets met by the end of the IRD DuhallowLIFE+ Project (*since the original application four primary schools were closed down).

Project Action	Description	Target	Achieved
A1	Upper Blackwater SAC Management Plan	1	1
A2	Guide to sustainable riparian and water quality management on farms in close proximity to riverine SACs	1	1
A3	Upper Blackwater Tributaries Habitat Development Plan	1	1
C1	Stabilise river bank	0.44km	0.52km
C2	Fence river bank	37.96km	38km
C3	Cattle crossing	3	3
C4	Construct wetlands	2	2
	Install silt traps	5	6
C5	Coppice/prune river bank trees	6.46km	6.46km
C6	Plant riparian zone	6.84km	7.47km
C7	Construct otter holts	10	10
	Construct brush bundles	28	28
C8	Place kingfisher nest boxes	12	12
C9	Place dipper nest boxes	10	20
C10	Remove Himalayan Balsam	4.56km	35.7
D1	Hold public awareness workshops	10	30
D2	Visit primary schools	40	36*
	Visit secondary schools	5	5
D3	Hold educational lectures	32	32
D4	Upload articles to website	24	84
D5	Involve schools in software application	36	36
D6	Issue press releases	34	34
	Publish magazine articles	4	9
	Do national radio interviews	4	4
	Do local radio interviews	8	8
	Do TV programmes	2	1+DVD
	Facebook posts	n/a	37
	Do web articles on e-magazines	4	4
D7	Erect appropriate signage	5	5
	Issue newsletters	16	16
	Produce brochures	4	4
D8	Host End of LIFE Project Conference	1	1
E1	Convene a Project Advisory Group	1	1
E2	Employ Project Team	1	1
E3	Carry out fish stock surveys	4	9

	FPM Survey	n/a	
E4	Carry out otter, kingfisher and dipper surveys	3	4
E5	Liaise with other LIFE projects	n/a	
E6	External Audit	1	1
E7	External Evaluation	1	1
E8	Produce After-LIFE Plan	1	1

Stakeholder engagement

River Allow Catchment Management Group

The IRD Duhallow LIFE+ Project and Cork County Council, through their TRAP Project, have been working collaboratively to bring about improvements to the River Allow. To achieve this aim, the River Allow Catchment Management Group (RACMG) was set up in April 2014. Key stakeholders were identified and worked together to roll out an agreed plan. The process is known as Integrated Catchment Management. This process is open, non-binding and flexible as it takes a practical approach to meet the issues affecting the river as they arise. The key aim is to make real progress on the ground for everybody by putting people and the river first. The group meets on a regular basis at the James O’Keeffe Institute, Newmarket, Co Cork.



Figure 2 Project Co-Ordinator Dr Fran Igoe demonstrating bank restoration works in the Allow Catchment to members of the RACMG

Table 2 List of stakeholders involved in the Allow River Integrated Catchment Management Group (Some stakeholders may have an interest in more than one sector) (Igoe, et al., 2015)

Sector	Stakeholder (Organisation)
Agriculture practitioner	Local farmers, Irish Farmers Association, Irish Farmers and Milk Suppliers Association, Irish Farmers with Designated Land
Agriculture advisory/policy	Teagasc, Department of Agriculture, Food and the Marine
Environmental NGOs	Sustainable Water Network, Coomhola Salmon Trust Ltd, Cork Nature Network, Duhallow Birdwatch Group
Forestry practitioner	Coillte
Forestry advisory/policy	Forest Service
Wildlife/Environmental regulation	Environmental Protection Agency, Inland Fisheries Ireland, Cork Co Council Environment Section, National Parks and Wildlife Services
Planning/forward planning	Cork Co Council Planning and Forward Planning
Road and bridge management	Cork Co Council Engineering Section
Flood management	Office of Public Works
Education/research	Local school teachers (out of school term only), Mary Immaculate College
Angling	Kanturk Trout Angling Club, Duhallow Angling Centre of Excellence
Community and voluntary	Individual Volunteers, Kanturk Community Development Group, Tidy Towns
On the ground conservation works	Local anglers, IRD Duhallow staff, Scheme participants, LIFE project team

Landowners

Landowners and farmers along the Allow River and its tributaries have been an integral part of the IRD DuhallowLIFE+ Project. Permission to access land was very forthcoming and the vast majority farmers were very welcoming of the project actions proposed. This is largely attributed to the 25 year relationship IRD Duhallow has developed with the local community. Fencing along the river was seen as a positive, with some farmers offering their services in erecting fence posts. Managed cattle crossing regimes were agreed to by the three landowners approached, thus committing them to drive their livestock across the river in a quick and efficient manner.



Figure 3 Project Officer, Kieran Murphy, demonstrating one of the pasture (nose) pumps (installed as alternative options to cattle directly accessing rivers for drinking water) during a landowner information day.

Volunteer Work

Volunteers have been an integral part of the project, providing additional support for a range of actions. From the removal of Himalayan Balsam to biodiversity audits, the volunteer work has been invaluable. Volunteers have ranged from people wanting to help in their spare time to qualified ecologists, environmental scientists and biologists looking to gain experience.



Figure 4 Volunteers removing Himalayan balsam from the banks of the River Allow

“I can’t overstate how important I think the work the DuhallowLIFE Project is doing, I think everyone in Duhallow and the surrounding area should put on a pair of waders and walk or jump in a boat and float down the length of the river, maybe picking some Balsam on the way, it would change their view of the area forever it’s exactly the way a river should be” - Excerpt from testimonial by Brendan Lewis, volunteer with IRD Duhallow’s DuhallowLIFE Project (2014)
(published in brendanlewis.wordpress.com/2014/04/10/ird-duhallow-life-patagonia-internship/)

SWOT Analysis

Table 3 SWOT Analysis of IRD DuhallowLIFE+ Project at end of project

<p>Strengths</p> <ul style="list-style-type: none"> • IRD Duhallow has an excellent reputation among the local community, including landowners and farmers • IRD Duhallow’s 25-year experience in delivering EU and national programmes • The project has a good buy-in with the landowners on numerous actions • There is good engagement from local community, volunteers and local angling clubs • Project staff members have scientific backgrounds in relevant areas • Resources in Rural Social Scheme • Project established strong relationship with a range of state agencies 	<p>Weaknesses:</p> <ul style="list-style-type: none"> • Under staffing at an administration level • Requirement to upskill staff on a rotational basis • Poor broadband infrastructure • Relationship with national competent authority
<p>Opportunities:</p> <ul style="list-style-type: none"> • An Integrated Catchment Management Initiative has been set up to bring relevant stakeholders together to bring about the long-term improvement of conditions in the Allow River (Upper Blackwater SAC) catchment • The EPA Research Programme, along with Cork County Council and Mary Immaculate College, is working with IRD Duhallow on a project that aims to develop and transfer knowledge regarding how a community can manage their own water resources for everyone’s benefit • Reputation of IRD Duhallow on-the-ground: opportunity for further programmes 	<p>Threats:</p> <ul style="list-style-type: none"> • There is a perceived unfairness in the administration of the GLAS scheme • Lack of meaningful engagement with many state agencies, especially from the competent authority • As a rural development company IRD Duhallow has suffered a reduction in government funding and resources • Unmonitored treatment plants (DWTP and WWTP) and licensed discharged points • Top down approach by regulatory authorities potentially alienates local communities • Absence of collaborative approach to management of site by competent planning authorities

After-LIFE objectives and methodology

Conservation Priorities

The After-LIFE objectives of this project are to ensure the maintenance of the measures delivered, between 2010 and 2015. IRD Duhallow has identified the RACMG as the appropriate vehicle to continue the improvement of the conservation status of the site.

IRD Duhallow will coordinate the following measures with the support of Inland Fisheries Ireland (see Appendix for Gantt Chart for estimated timeline):

Table 4 IRD Duhallow LIFE+ Project actions that will be maintained as part of the After-LIFE Plan.

Project Action	Measure
C1	Bank Restoration and maintenance
C2	Fencing maintenance
C3	Cattle pump and trough maintenance
C4	Silt trap maintenance
C5	Coppicing
C6	Additional planting
C7	Otter holt inspection
C8	Kingfisher nest inspection
C9	Dipper nest inspection and removing old nests
C10	Removal and maintenance of Himalayan balsam
E3	Fish Stock monitoring (incl. FPM)

The RACMG also has a commitment to ensure the improvement and maintenance of the Allow River SAC.

AfterLIFE Monitoring Plan

To achieve targets set out by the Water Framework Directive (WFD), an improved monitoring protocol of wastewater treatment plants (WWTP) and drinking water treatment plants (DWTP) will need to be put in place. This measure is highlighted in the Catchment Management Plan and will be achievable through the RACMG.

Forestry and agricultural discharge is also a WFD issue that the After-LIFE plan will address. This will be through commitments from Coillte (semi-state commercial forestry company) and

landowners, in the form of the GLAS Scheme. Again, the RACMG will be on hand to see this commitment through.

A booklet entitled “Two Minute Pull” published initially for members of the Kanturk Trout Angling Club will be circulated among the public annually, as a quick guide to public participation in H. balsam control. This gives instructions on how to deal with small stands of Himalayan balsam. A commitment from the angling club has been made to monitor and eradicate H. balsam from certain stretches on the Allow, Dalua and Brogeen rivers.

IRD Duhallow’s Rural Social Scheme and Tús Scheme participants will be deployed to tackle heavy infestations of Himalayan balsam along the Allow, Dalua, Brogeen Rivers and Rampart Stream. An eradication programme will be in place to systematically tackle all four channels. For two weeks in May/June and two weeks in August/September, crews will be sent to the four rivers to walk the river banks and remove any balsam they find. Drains and tributaries will also be inspected.

Capacity needs of Project team

IRD Duhallow and Inland Fisheries Ireland will ensure that the necessary levels of expertise and knowledge to achieve the targets of this AfterLIFE Plan are available. IRD Duhallow manages a number of schemes and initiatives and is well equipped to maintain the work it started with its LIFE Project. IRD Duhallow has a team of RSS and Tús participants on hand to tackle issues such as large stands of Himalayan Balsam and to perform more large-scale monitoring of the infestation. As mentioned, Kanturk Angling Club has given its commitment to help with the removal of balsam.

Regular contributors to the RACMG come from many different sectors (*Table 2*) and from many fields of expertise. Meetings of the group are held every six weeks to address the many obstacles that arise when addressing conservation issues in the Allow catchment. In addition to the advantages of having these sectors at a single meeting with the objective of identifying, discussing and troubleshooting on issues affecting the river, there is real potential to achieve improvements on the ground. An example of this cooperation was the cessation of municipal discharge, which had rendered the river lifeless for several metres downstream at the time of sampling in October 2014 (EPA Q-value: <1). Subsequent communication within the RACMG brought about almost immediate remediation of the issue. Follow up sampling (June 2015)

found a marked improved to the management of the facility and to the water quality (EPA Q-Value: 4.5).

IRD Duhallow staff will be supported by volunteers and work placement. Depending on levels of expertise they will be assigned tasks in keeping with objectives set out in this plan, and appropriate to their ability

Sustainable Strategy

IRD Duhallow will continue to host the RACMG meetings. Through these meetings conservation efforts for the Allow Catchment will continue to be discussed with the appropriate stakeholders lending their expertise and possible funding strategies to further improving the Allow catchment’s habitat. IRD Duhallow will also continue to provide on-the-ground staff (RSS and Tús) to perform maintenance work to many of the actions the LIFE Project conducted (e.g. silt trap maintenance).

Addressing the measures outlined as part of the AfterLIFE plan requires a sustainable approach. Each measure will need to be delivered in a manner that ensures maximum uptake from the relevant stakeholders. IRD Duhallow will lend technical and practical support to stakeholders for a number of the measures, while monitoring surveys conducted by other stakeholders on a national level (e.g. IFI and NPWS) will tie in with the monitoring measures of the plan (*Table 5*).

Table 5 Stakeholder involvement in addressing AfterLIFE measures

	Measure	Strategy to address AfterLIFE measures involving stakeholders
C 1	Bank restoration and maintenance	Promotion of best practice technique in riverbank restoration
C 2	Fencing maintenance	Technical support for 'flood friendly fencing' from IRD Duhallow staff. Reminder to landowners, in need of support, annually (post flooding) via IRD Duhallow Newsletter
C 3	Cattle pump and trough maintenance	Technical support from IRD Duhallow staff. Annual Spring reminder to landowners, in need of support, via IRD Duhallow Newsletter
C 4	Silt trap maintenance	Technical support and maintenance from IRD Duhallow staff. Annual reminder to landowners, in need of support, (post flooding) via IRD Duhallow Newsletter
C 5	Coppicing	IRD Duhallow staff (RSS) will conduct one week of coppicing planted sites twice annually (February and October).
C 6	Additional planting	Landowners will be encouraged to plant trees along unprotected riverbanks through the GLAS scheme.
C 7	Otter holt inspection	Volunteers and members of the Cork Nature Network to conduct annual inspections of otter holts and brush bundles
C 8	Kingfisher nest inspection	Volunteers and members of the Cork Nature Network to conduct annual inspections of kingfisher nest boxes
C 9	Dipper nest inspection and removing old nests	Volunteers and members of the Cork Nature Network to conduct annual inspections of dipper nest boxes. Nest boxes will also be cleaned annually to ensure reuse.

C 1 0	Removal and monitoring of Himalayan balsam	Focussed and sustained on the ground implementation by IRD Duhallow (RSS and Tús Scheme) and local anglers for one week in June, August and September. Annual reminder to anglers and volunteers via IRD Duhallow Newsletter. Annual information workshop with Inland Fisheries Ireland and Cork Nature Network.
E 3	Fish Stock monitoring	Electrofishing surveys conducted by Inland Fisheries Ireland in 2017 and 2019
E 3	Freshwater Pearl Mussel monitoring	National Parks and Wildlife Service will conduct Freshwater Pearl Mussel monitoring as part of a national monitoring programme

Institutional Issues

There have been difficulties in communicating with some of the regulatory authorities regarding responsibilities for different aspects of the LIFE+ Project. Planning issues arose during the duration of the project with regard to some project actions. Riverbank restoration works, which were aimed at reducing erosion and sedimentation of the channel, were delayed considerably. These delays were found to be counter-productive, increasing costs in project delivery with no tangible benefit and can potentially inhibit works due to environmental timeframes (e.g. salmon spawning season, bird nesting season, etc.). Licensing delays have also been problematic with freshwater pearl mussel surveys, further delaying delivery of certain project actions.

Through the RACMG and the EPA funded research project, these issues are being dealt with in an open and integrated manner. Bringing the relevant authorities together in such a forum offers a synergetic approach to addressing these issues.

Financial Outlook

Many stakeholders have supported the project beneficiaries during the LIFE project. To ensure the maintenance of a certain number of these actions the continued support of these stakeholders will help project delivery. Certain measures will need to be financially supported. IRD Duhallow, outside the LIFE+ Project, will be able to administer man-hours through the Rural Social Scheme and Tús. Through the RACMG state bodies have given their commitment to support survey and monitoring work. The GLAS (agri-environmental) Scheme will give financial incentive to maintain some of the agricultural measures provided by the LIFE Project. As mentioned in this document, volunteerism will play a major part in implementing the After-LIFE Plan. This will come in the form of Kanturk Angling Club and individuals. University and college placement participants will also be on hand to aid in many of the actions.

Table 6 List of actions that will be continued, at a maintenance level, and those responsible on an implementation and financial level.

Project Action	Measure	Stakeholder Responsible	Financial Support
C1	Bank Restoration	Landowners, Kanturk Anglers IRD Duhallow	Environmental funding schemes such as LEADER
C2	Fencing maintenance	Landowners	GLAS Scheme*
C3	Alternative Drinking Strategies and Managed Cattle Crossing	Landowners	GLAS Scheme* Cattle Management Agreement
C4	Silt Trap maintenance	Landowners IRD Duhallow	GLAS Scheme*, Rural Social Scheme Coillte
C5	Coppicing	Kanturk Anglers, IRD Duhallow	Rural Social Scheme
C6	Planting	Landowners	GLAS Scheme*
C7	Inspection of otter holts	Volunteers, Work experience students	Voluntary
C8	Inspection of kingfisher nest boxes	Volunteers, Work experience students	Voluntary
C9	Inspection of dipper nests and removal of old material	Volunteers, Work experience students	Voluntary
C10	Removal of Himalayan Balsam	IRD Duhallow Kanturk Anglers, Volunteers	Rural Social Scheme
E3	Fish Stock Survey (incl. FPM)	Inland Fisheries Ireland	Inland Fisheries Ireland

**IRD Duhallow is working on the development of a locally led agri-environmental scheme. The scheme is designed to meet the specific issues that need to be addressed by farmers within the Allow catchment and meet the water quality standards required for freshwater pearl mussel in the Allow river catchment.*

Conclusion

This EU LIFE Project provides an excellent example of stakeholder engagement in habitat and environmental management of a river catchment Special Area of Conservation. Many of the project actions could not have been achieved without involving landowners, anglers, state agencies and the general public. If these actions had not been implemented the River Allow and its tributaries would have continued to undergo excessive morphological changes to the riverbanks, siltation of spawning gravels and freshwater pearl mussel habitat and degradation the catchment's riparian habitat.

This LIFE Project with many of its innovative measures in protecting rivers while maintaining landowners' properties (e.g. flood friendly fencing; figures 6 and 7 and silt trap treatment trains; figures 8, 9 and 10) has built on the foundation for trust between the agricultural communities and environmental projects, which IRD Duhallow built up over 25 years of bottom up development. The trusting relationship forged over the duration of the Project will be maintained and improved further through the AfterLIFE programme. Having RSS and Tús participants working on-the-ground to maintain many of the works conducted during the LIFE Project, and continually hosting RACM meetings, will ensure that landowners, and other stakeholders, will be engaged and invested in the long term process of protecting the River Allow and its tributaries.

Appendix

Gantt Charts

Table 7 Gantt Chart for AfterLIFE measures in 2015

ACTIVITY	PERIODS						
	2015						
	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Action C1 - Reduction of Erosion (Bank Restoration*)							
Action C2 - Fencing maintenance							
Action C3 - Cattle drinks maintenance							
Action C4 - Silt Traps Cleaning							
Action C5 - Coppicing							
Action C6 – Planting							
Action C7 - Otter Holts inspection							
Action C8 - Kingfisher							
Action C9 - Dipper (Old nest removal)							
Action C10 - Himalayan Balsam removal							
Action E3 - Electrofishing survey							
Action E3 - Freshwater Pearl Mussel survey							
River Allow Catchment Management							
*availability of further funding							

Table 8 Gantt Chart for AfterLIFE measures in 2016

ACTIVITY	2016											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Action C1 - Reduction of Erosion											
Action C2 - Fencing maintenance												
Action C3 - Cattle drinks maintenance												
Action C4 - Silt Traps Cleaning												
Action C5 - Coppicing												
Action C6 - Planting												
Action C7 - Otter Holts inspection												
Action C8 - Kingfisher												
Action C9 - Dipper (Old nest removal)												
Action C10 - Himalayan Balsam removal												
Action E3 - Electrofishing survey												
Action E3 - Freshwater Pearl Mussel survey												
River Allow Catchment Management												

Table 9 Gantt Chart for AfterLIFE measures in 2017

ACTIVITY	2017											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Action C1 - Reduction of Erosion (Bank Restoration*)												
Action C2 - Fencing maintenance												
Action C3 - Cattle drinks maintenance												
Action C4 - Silt Traps Cleaning												
Action C5 - Coppicing												
Action C6 - Planting												
Action C7 - Otter Holts inspection												
Action C8 - Kingfisher												
Action C9 - Dipper (Old nest removal)												
Action C10 - Himalayan Balsam removal												
Action E3 - Electrofishing survey												
Action E3 - Freshwater Pearl Mussel survey												
River Allow Catchment Management												

***availability of further funding**

Table 10 Gantt Chart for AfterLIFE measures in 2018

ACTIVITY	2018											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
	Action C1 - Reduction of Erosion (Bank Restoration*)							■	■			
Action C2 - Fencing maintenance			■							■		
Action C3 - Cattle drinks maintenance												
Action C4 - Silt Traps Cleaning				■							■	
Action C5 - Coppicing		■										
Action C6 - Planting												
Action C7 - Otter Holts inspection					■						■	
Action C8 - Kingfisher								■				
Action C9 - Dipper (Old nest removal)											■	
Action C10 - Himalayan Balsam removal					■	■		■	■			
Action E3 - Electrofishing survey									■			
Action E3 - Freshwater Pearl Mussel survey						■						
River Allow Catchment Management			■			■			■			■
*availability of further funding												

Table 11 Gantt Chart for AfterLIFE measures in 2019 and 2020

ACTIVITY	2019												2020				
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
	Action C1 - Reduction of Erosion (Bank Restoration*)																
Action C2 - Fencing maintenance																	
Action C3 - Cattle drinks maintenance																	
Action C4 - Silt Traps Cleaning																	
Action C5 - Coppicing																	
Action C6 - Planting																	
Action C7 - Otter Holts inspection																	
Action C8 - Kingfisher																	
Action C9 - Dipper (Old nest removal)																	
Action C10 - Himalayan Balsam removal																	
Action E3 - Electrofishing survey																	
Action E3 - Freshwater Pearl Mussel survey																	
River Allow Catchment Management																	

***availability of further funding**

Two-minute (Balsam) Pull

Two Minute Pull

By simply pulling by hand the Himalayan Balsam can be removed from the ground with relative ease. This is due to a relatively shallow rooting system.

1. When out along the river bank be vigilant for any sign of Himalayan Balsam.
2. If you spot any please take two minutes out of your time to remove the plant by hand
3. In dry conditions, or in areas of dry ground, plants that have been pulled can be left to desiccate and rot. However if conditions are wet and humid; greater care is required as the newly removed plant can continue growing from nodes along the long stalk.
4. For this reason the plant needs to be broken up with the root removed.
5. Care must also be given if the plant is in flower. Seedpods form from the flower heads. These spring-loaded pods can expel seeds up to 7m away. By carefully placing a small plastic bag over the flower before removing it the risk of reseeding the area is greatly reduced. The bags must then be disposed of carefully to ensure there is no re-infestation.
6. The map provided shows where dense stands of Himalayan Balsam (*Hotspots*) were located in the past. These areas need the most attention.

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Shallow roots makes for quicker removal

Himalayan Balsam
“Two Minute Pull”



Himalayan balsam is an attractive, non-native invasive terrestrial plant species. Since it was introduced, it has spread to most parts of Ireland. The species is particularly frequent along the banks of watercourses, where it often



The IRD DuhallowLIFE+ Project has advocated a non-chemical method for controlling this highly invasive plant.

Figure 5 One side of the Himalayan balsam "Two Minute Pull". The opposite side features a map of the River Allow catchment including extent of H balsam infestation.

Flood Friendly Fencing



Figure 6 Fencing wire detaches under pressure from flood debris



Figure 7 Once the flood has dissipated the wire and the electrical current can be reattached

Constructing a silt trap treatment train

Create a wooden box - 1-foot-deep (30cm) by 3-foot-wide (90cm) by 2-foot long (60cm). This can be tailored to suit the shape and features of the drains. The traps are to be placed with top of box flush with bottom of drain (substrate of drain). On the downstream end two to three 4inch fence posts are to be driven into the drain bed and used Christmas trees (or other filterer material) to be strapped across the channel to create a buffering effect. If stones are available, they can be used to bank up the rear of the trap.

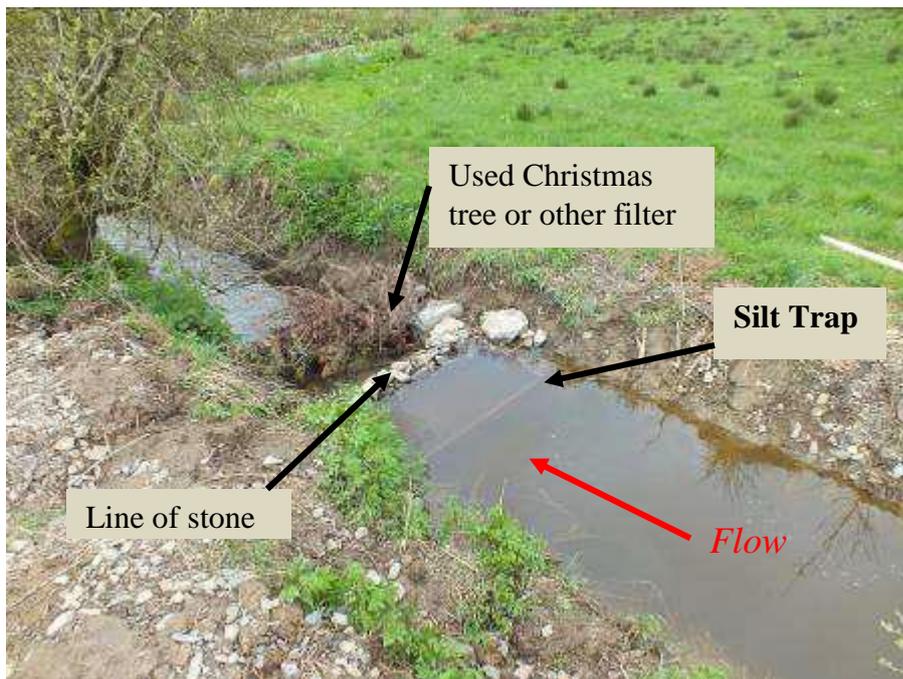


Figure 8 Single module of silt trap treatment train



Figure 9 Box upstream of gravel wall and secured Christmas trees to buffer flow.

The traps can be placed 5m apart (approx.) on the downstream end of the drain. To make these traps a viable silt entrapment, they must not be allowed to get full or they will lose their effectiveness. They can be emptied manually or if wished a large material fertiliser/sand bag can be fitted into the box and each of the four handles held open by attaching them to the box by means of an egg insulator. When the bags need emptying, unscrew the insulators and thread a chain through the handles, this chain can be placed on the front loader of the tractor and lifted out.



Figure 10 Material can be moved either manually or with machinery.