LIFE Integrated projects 2018

Stage 2 – FULL PROPOSAL

Technical application forms

Part B – technical summary and overall context of the project

GLOSSARY OF TERMS

RBMP	River Basin Management Plan
RBAPS	Results Based Agri-environment Payment Schemes
EPA	Environmental Protection Agency
SAC	Special Area of Conservation
WFD	Water Framework Directive
DHPLG	Department of Housing, Planning and Local Government
DCHG	Department of Culture, Heritage and the Gaeltacht
DAFM - FS	Department of Agriculture, Food and the Marine – Forestry Service
NPWS	National Parks and Wildlife Service
OPW	Office of Public Works
Coillte	State forestry body
Teagasc	Ireland's Agriculture and Food Development Authority
IFA	Irish Farmer's Association
HS Waters	High-Status Waters
AECMs	Agri-Environmental Climate Measures
EAFRD	European Agricultural Fund for Rural Development
ESIF	European Structural and Investment Funds
NWRA	North-Western Regional Assembly
GLAS	Green Low-carbon Agri-environment Scheme
NWRM	Natural Water Retention Measures
CAP	Common Agricultural Policy
LA	Local Authority
GIS	Geographic Information System
STRIVE programme	Science, Technology, Research and Innovation for the Environment Programme
ACP	Agricultural Catchment Programme
EIA	Environmental Impact Assessment
OSI	Ordnance Survey Ireland (the National Mapping Agency)
GAP regulations	Good Agricultural Practice for Protections of Water regulations
UFU	Ulster Farmers Union
YFCU	Young Farmers Clubs of Ulster
SPZ	Source Protection Zones
SgZ	Safeguard Zones
WPZ	Water Protection Zones
DEFRA	Department for Environment, Food and Rural Affairs (UK)
ESA	Environmentally Sensitive Areas
GHG	Greenhouse Gas
LAWPro	Local Authority Waters Programme

WPAC	Water Policy Advisory Committee
EIP	European Innovative Partnership
FPM catchments	Freshwater Pearl Mussel catchments
AEOS	Agri-Environment Option Scheme
RDC	Rural Development Companies
SKDP	South Kerry Development Partnership
CIEEM	Chartered Institute of Ecology and Environmental Management
NCMC	National Co-ordination and Management Committee

SUMMARY DESCRIPTION OF THE PROJECT (English version)

1. Overall context/background/geographical scope:

The loss of high status waters has been identified as an important issue within Ireland and across Europe. The protection and restoration of these waters is one of the key underpinning principles of the Water Framework Directive. This is recognised, with appropriate commitments contained, within Ireland's second cycle River Basin Management Plan. This application supports a key measure in Ireland's plan for high status waters protection and restoration.

River Basin Management Plan

The River Basin Management Plan for Ireland 2018-2021 was published in April 2018 and sets out the measures to be implemented to 2021 to protect and improve the status of water bodies in the Irish River Basin District (https://www.housing.gov.ie/water/water-quality/river-basin-management-plans/river-basin-management-plan-2018-2021). The Irish River Basin District covers an area of 70,273 km^2 and includes 140 designated bathing waters, 64 shellfish growing waters, 42 nutrient sensitive areas, 358 special areas of conservation (SACs) with water dependency and 154 special-protection areas (SPAs) (Section 1.2, pages 3-4).

The plan was prepared in accordance with the requirements of Article 13 of the Water Framework Directive (2000/60/EC) and underwent significant public consultation as the plan was being developed. Substantial resources have been invested in developing the plan, including putting in place improved governance and implementing structures to improve plan delivery based on the experiences learned during the first cycle river basin management plans. These new arrangements bring policy, technical and implementing actors together, including with public and representative organisations, to ensure the effective and coordinated development and implementation of measures.

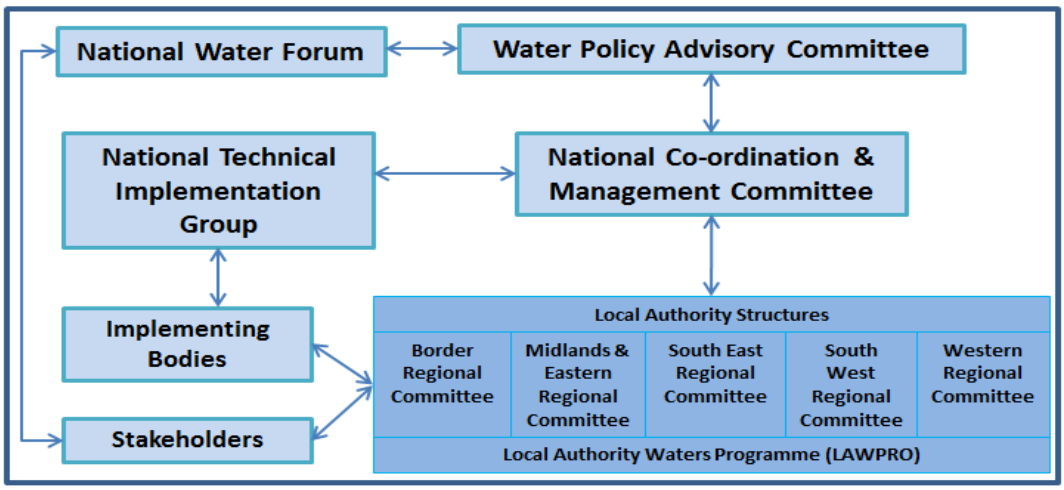


Figure1: Governance and co-ordination structures for implementing Ireland's RBMP

The new governance arrangements are more fully described at Section 10.2 of the Plan (pages 119-124).

For the purpose of plan preparation, Ireland's Environmental Protection Agency (EPA) has undertaken technical assessment of 4,829 water bodies, examining whether they are meeting their Water Framework Directive objectives now, and assessing if they are *At Risk* of not meeting these objectives at some time in the future. The River Basin Management Plan sets out a wide range of measures based on the assessments undertaken by EPA and

the priorities agreed during plan preparation. A summary of the key measures and expected environmental outcomes for the second-cycle River Basin Management Plan is provided at Section 13 of the plan (pages 137-143). A new plan will be prepared to cover the period 2022- 2027. This will build upon and further develop the work undertaken during the current plan period.

High-Status Water Bodies

There has been a continued long-term decline in the condition of high-status waters in Ireland (RBMP Section 4.5, page 28). The need to address the loss of high-status waters was identified as a significant water management issue during the public consultations undertaken when the River Basin Management Plan was being prepared (RBMP Section 2.4, pages 8-10). As a consequence, the plan has identified the need to implement measures specifically targeted to protect these waters. The measures proposed are described at Section 8.3.2 (RBMP pages 103-106) of the plan and include the establishment of a *Blue Dot Catchments Programme* and this proposed Life IP project *(Waters of LIFE)* to coordinate efforts and resources across state agencies to better protect and manage these waters.

High-status water bodies are water bodies which show no, or only very minor, alteration to the values of the physico-chemical and hydromorphological quality elements appropriate to the surface water body type to which they belong, and where the biological quality elements show no, or only minor distortion. They are especially sensitive to external pressures and relatively small changes in land-use management. Rivers and lakes which are at high-status are important for supporting aquatic species and habitats sensitive to enrichment or siltation such as, for example, the protected but declining freshwater pearl mussel (*Margaritifera margaritifera*) and juvenile salmon. They contribute significantly to overall species diversity, including the recolonization of species to rehabilitated rivers and lakes. Their maintenance and protection play an important role in conserving species and biological diversity; there is significant overlap between high-status waters and the River Basin District SACs with water dependency (RBMP Section 1.2, page 3) and illustrated for river sites in the following Graph.

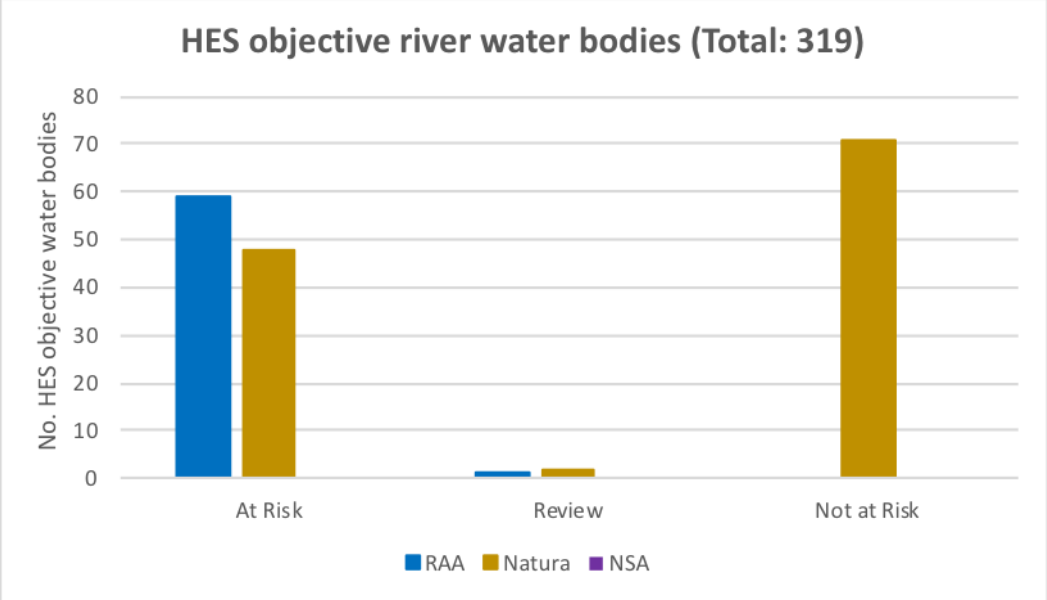


Figure 2: River Water Bodies with Natura Designation

The location and extent of water bodies with a high-status objective is shown on the map provided at section B2a of the proposal. The high status river catchments cover an area of 3,800 km^2 and comprise 5% of the Irish River Basin District. They are in the main located in less densely populated areas. In Ireland, as elsewhere, many high-quality waters are found in the headwaters of rivers containing ecological communities of fundamental biodiversity importance. These areas tend to be more remote and less economically developed than other parts of the country. They are generally not intensively farmed. Because of their

ecological sensitivity, relatively minor changes in land-use e.g. field drainage for farming purposes, low levels of agricultural activity, turf cutting, one-off housing and forestry activities can impact negatively on water status if land use in these areas is not very carefully managed.

EPA has determined that the risk profile of high-status water bodies is different to the general risk profile across water bodies nationally. In the case of those high-status water bodies which EPA has determined to be *At Risk* of not meeting their objective under the Water Framework Directive, forestry activity was a significant pressure in 40% of cases, hydromorphological alteration in 34%, agriculture in 28% and peat extraction or disturbance in 13% of cases (RBMP Section 5.3, pages 38-45).

The number of high-status water-bodies varies widely across the EU either due to a natural dearth of water body types or due to ubiquitous impacts that reduce numbers overall (EEA,2012 www.eea.europa.eu/data-and-maps/data/wise_wfd-european-data). Ireland and Austria stand out as member states having a relatively high number of high-status water bodies (7401 and 5670 respectively) and also the percentage of water bodies at high-status (18% in both cases). With some exceptions e.g. Malta, Slovakia, Lithuania and Croatia, other European countries have few left: UK: 4%, Germany: 0.8%, France: 6.5%, Belgium: 1.2% and Poland 0.9%. Remaining high status waters need to be preserved to serve as goals for exemplary biological and environmental quality. Importantly, a network of EU high-status water bodies provides a mechanism for the preservation of European aquatic biodiversity and a possible buffer to the impacts of climate change (*Hering*, 2010). This is also crucial to meet European and global ambitions to halt biodiversity decline (Secretariat of the Convention of Biological Diversity, 2001: EC, 2011).

Challenges

The implementation of measures to protect high-status waters on a large-scale is difficult and challenging. Whilst various research projects and other initiatives have been undertaken to-date to address their protection, there is limited experience of the effective application of measures at a landscape or catchment-wide scale in an integrated way. One of the key challenges will be to ensure a sense of community ownership of the actions proposed, including ensuring local community involvement and support for the land-use management changes that will need to be implemented if the protection of high-status waters is to be ensured.

The Department of Housing, Planning and Local Government, together with the other Irish authorities responsible for implementing Ireland's River Basin Management Plan, have identified the need for a pilot-based initiative to help develop and bring forward a practical approach for the long-term protection of these waters, to support the more effective implementation of measures across all high-status waters and to better inform the further elaboration of policies and measures to be included in future River Basin Management Plans.

2. Project objectives:

The overall objective of this LIFE IP project (*Waters of LIFE)* is to support the implementation of Measures to Protect and Enhance High-Status Waters and thus to support the work of the *Blue Dot Catchments Programme* as outlined at Section 8.3.2 (pages 103-105) of the River Basin Management Plan for Ireland 2018-2021.

The *Waters of LIFE* IP will act as a catchment-scale demonstration project to test and validate the effectiveness of implementing locally-tailored 'best practice' measures across a range of landscape and land-use management activities typically associated with the catchments of high-status waters. The project will trial and validate the implementation of measures at the catchment scale across a number of pilot catchments with the view to building national understanding and capacity, optimising approaches for the targeting of measures in critical areas of the catchment, assessing the effectiveness of the approach and using the learnings

from the project to inform and support ongoing work across all high-status catchments in the Irish River Basin District. It will demonstrate the effective implementation of an integrated catchment-based approach for the application of measures to protect and/or restore all waters for which a high-status objective has been identified in Ireland's River Basin Management Plan.

The project will operate as a standalone project working alongside, but in very close cooperation with, the work already underway as part of Ireland's River Basin Management Plan. Strong links established between the project and the structures in place to oversee implementation of the River Basin Management Plan will ensure that ongoing learnings and findings from the project will provide an important platform and support framework for the work undertaken under the current *Blue Dot Catchments Programme,* and the further elaboration of measures to be included in future River Basin Management Plans. Outputs from the project will support the refinement and ongoing development of guidance and measures for farming, forestry and other land-use practices in the catchments of high-status waters. Critically, project outputs will provide input to the development of future national policies and strategies for the protection of high-status waters, in particular approaches for the elaboration of future agri-environment and forestry support measures needed to protect and preserve this important environmental resource.

The project will give particular emphasis to the following aspects of project development and implementation which will provide the key learnings from the project:

A: Building technical understanding and capacity in relation to the design and implementation of measures in a strategic and integrated way across a variety of key land-use pressures and activities to deliver effective solutions at a landscape / catchment-wide scale for the protection of high-status waters;

B: Promoting community and landowner ownership of the actions proposed and ensuring local community involvement in developing the land-use management actions to be implemented;

C: Making recommendations that will inform the development of future agri-environment and forestry policies and provide for the long-term sustainable management of high-status areas;

D: Enhancing public appreciation of the ecology, ecosystems and natural capital value of high-status waters and their catchments;

E: Developing and building synergies between measures implemented to address water quality considerations and related biodiversity objectives within the catchments of high-status waters, and:

F: Monitoring and demonstrating the effectiveness of the measures implemented.

3. Actions and means involved:

Scope and nature of the LIFE IP project

The project will be implemented across six high-status river catchments comprising a mixture of land-use activities typical of such catchments. Each catchment will be approximately 120-130 km^2 in area. One of the six catchments will be selected on the basis that it has consistently demonstrated high-status conditions in the past and is currently '*Not At-Risk*' of failing to meet its WFD objectives in the future. This will serve as a control catchment and will be used to monitor the possible future effects of climate change on high-status waters over time. Monitoring arrangements will also be put in place to identify any future changes to land-use within the control catchment which could impact on water status at some future date.

Five other catchments will serve as demonstration catchments for the implementation of catchment-wide protection or mitigation measures. Monitoring arrangements will be put in place to establish baseline conditions at the start of the project to evaluate the effectiveness of measures implemented. Measures will address the principal land-use activities causing significant pressure on water status in high-status catchments. These are: forestry, hydromorphological alteration, farming, peat extraction and urban and domestic waste water discharges. Catchments will be selected which allow both the implementation of measures which are necessary solely to ensure the 'protection' of high-status waters, and also the implementation of measures where 'restoration' may be required in parts of the catchment, or where a water body has been determined to be '*At Risk*' of not meeting its WFD objectives.

The project will focus on demonstrating the practical application of bespoke locally-tailored solutions at both the catchment and the plot scale, based on best scientific understanding of the environmental circumstances and priorities within individual catchments and taking account of the input and views of local farmers, landowners and people within the community who have knowledge of their own locality. The project will give strong emphasis to harnessing community involvement, ownership and goodwill in order to achieve mutual benefits and deliver the necessary land-use management changes to support the long-term protection and maintenance of high-status waters.

A strategic high-level management plan will be developed for each of the pilot catchments. This will map the key habitat / ecological features of the catchment, generally describe their condition, identify and map the main land-use activities and pressures and undertake an assessment of their likely impact on the environment and ecology of the catchment area and on water quality. The starting point for this work will be the catchment characterisation work undertaken by EPA for the purpose of preparing the River Basin Management Plan. The management plan will identify the key strategic outcomes needed at a catchment scale to improve the ecological management of the area and to protect water quality. The programme of measures will focus on delivering the priority outcomes identified in the management plan and will develop and apply a bespoke set of locally-tailored solutions which will be finalised in consultation with the local community, with farmers and with other landowners.

Type of measures to be implemented

Interventions to address water quality issues to-date have typically involved the implementation of EU-wide regulations and/or agri-environment measures developed at a national or regional scale. Examples include Action Programmes prepared under the Nitrates Directive (91/676/EEC) which are designed to improve water quality by regulating on-farm nutrients either in specific zones or using a whole territory approach. Similarly, successive agri-environment and forestry schemes have generally followed a similar national approach, notwithstanding that national agri-environment schemes do include many initiatives that support low input farming in sensitive catchments. However, because of the specific sensitivities and spatial variation that is found in the catchments of high-status waters, to be truly effective, programmes to protect these waters must be tailored in an integrated way to the particular environmental circumstances found within individual catchments. Programmes must also win the 'hearts and minds' of local communities and must harness community ownership, involvement and goodwill if they are to be adopted at a sufficiently large scale to succeed.

More recently, attempts have been made to address the requirement for more tailored, site specific interventions by way of various initiatives and research such as, for example, HYDROFOR (*http://www.ucd.ie/hydrofor/home.htm/*), Kerry LIFE (http://www.kerrylife.ie/), Duhallow LIFE (*https://www.duhallowlife.com/*), Mulkear LIFE (*http://mulkearlife.com/the-mulkear-river/*) and the Harmony Project (*https://www.teagasc.ie/environment/water-quality/harmony/*). This project will audit and draw from these learnings and will aim at adapting solutions most relevant to the types of problems encountered in high-status catchments. The interventions implemented by the project will place strong emphasis on the application of bespoke measures, drawn from a framework, for the improved management

of agricultural lands (such as grasslands and peatlands), implementing site-specific solutions to address hydromorphological pressures and implementing habitat-management approaches to deliver meaningful catchment-wide ecological improvements to protect and enhance water quality into the future. In relation to forestry activities, the project will implement best management practices to mitigate the impacts of forestry on water quality and demonstrate how the creation of new native woodlands used in combination with undisturbed water setbacks can be used to form permanent semi-natural features to enhance biodiversity and protect water quality. The project will also deal with the especially challenging issue of the need for long-term restructuring of historical forestry plantation in those parts of the catchment where there is a high potential impact on water status from historical forestry practices.

The project will also examine the potential for Natural Water Retention Measures to mitigate flood and drought risk and improve water quality for forested and agricultural catchments and, where appropriate to individual catchment circumstances, will trial approaches in collaboration with two research projects that have recently been initiated in Ireland (SLOW WATERS, A strategic look at Natural Water Retention measures, EPA Research Programme 2013-2020; The ecosystems services of Ireland's forests for flood protection, Irish Research Council Enterprise Partnership 2019).

The approach will be tailored towards encouraging positive actions and developing and demonstrating catchment and plot-based solutions that deliver long-term cost-effective outcomes. Landowners in the catchment will be consulted as the approach is being developed in order to foster a high sense of local ownership of the measures to be implemented, and to encourage high levels of take-up especially in high potential impact areas within the catchment. Programme delivery will be supported by a results-based payment scheme to landowners for the environmental services provided. This will be developed and implemented by the project. Best-practice management guidance will be developed, and training and advisory support will be provided to participating landowners.

Project organisation and management

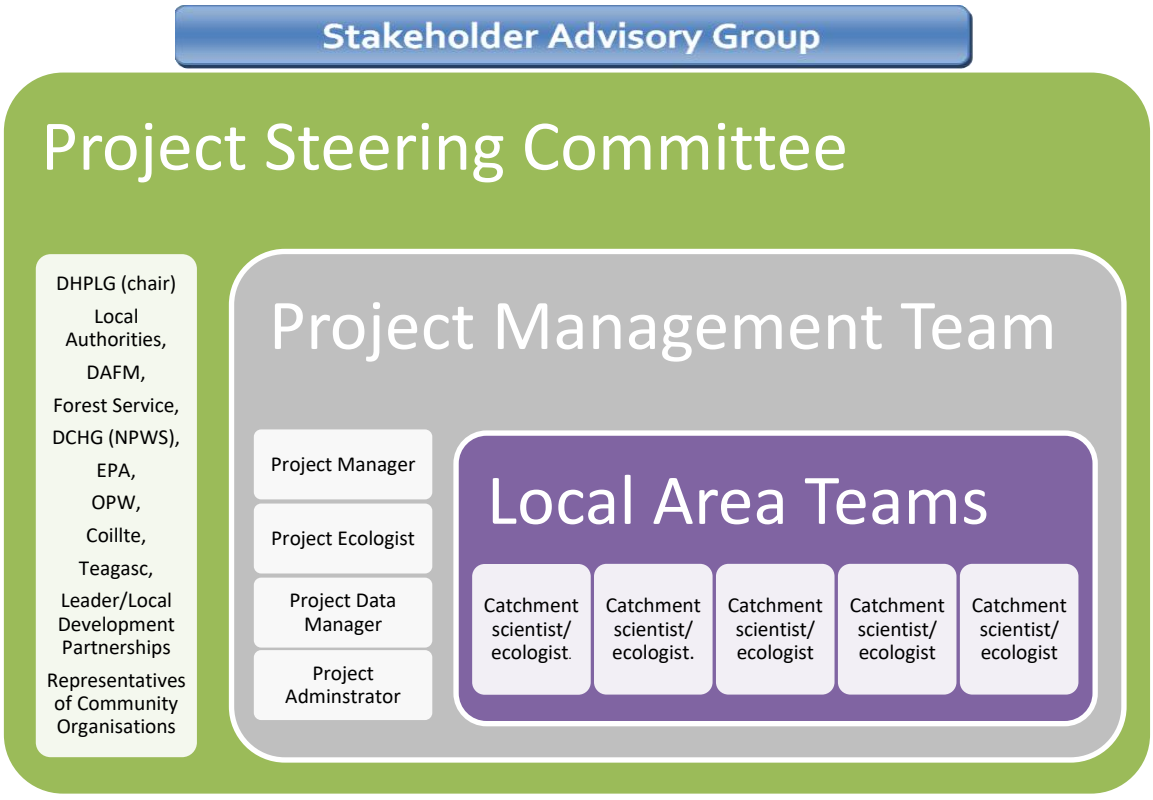


Figure3: *Waters of LIFE* Organisation Chart

The project will be managed by a Project Steering Committee (as illustrated in Figure 3 above) and will operate as a standalone project working alongside, but in very close cooperation with, the implementing structures established to oversee delivery of Ireland's River Basin Management Plan (section B1.1).

The Project Steering Committee will be chaired by the Department of Housing Planning and Local Government and will comprise representatives of Local Authorities, the Department of Agriculture, Food and Marine (DAFM), the Forest Service of the DAFM, the National Parks and Wildlife Service of the Department Culture, Heritage and the Gaeltacht, the Environmental Protection Agency, the Office of Public Works, Coillte (the State Forestry Body) and Teagasc (Ireland's Agriculture and Food Development Authority) and community representatives.

As working with local communities is a critical element of the project, a representative(s) of Community Organisations will be included on the Project Steering Committee. Whilst it is yet premature to finalise the precise nature of the Community representation, initial proposals include ten development partnerships, LEADER companies, possibly further supported by the Irish Natura Hill Farmers Association / IFA (Hill Farming, Environment and Rural Affairs, Forestry, Sheep, Farm Family Committees). Sample letters of support have been provided.

Local stakeholder groups will be engaged further in the demonstration catchments during the project's implementation stage.

The Project Steering Committee will provide specialist technical and policy oversight / input to the project. It will be responsible for general oversight and direction of the work of the project and for ensuring effective coordination between the project and implementation of Ireland's River Basin Management Plan. Strong links will be maintained through common membership and formalized reporting arrangements with the Water Policy Advisory Committee, the National Co-ordination and Management Committee and the National Technical Implementation Group which have been established to oversee delivery of Ireland's River Basin Management Plan (RBMP, Section 10.2, pages 119-124). The Water Policy Advisory Committee is mandated to provide high-level policy direction in relation to River Basin Management Plan implementation and to advise the Minister in relation to plan preparation and the programmes of measures.

A Project Management Team will be established to manage day-to-day delivery of the project. This will be headed up by a Project Manager and will comprise a core team of four personnel with strong project management, scientific and communications skills. The Project Manager will report to the Project Steering Committee. He/She will report to the Department of Housing, Planning and Local Government in relation to the financial management of the project. The core-team will be supported by local-area teams based in the pilot catchments who will work with local communities and landowners and support implementation of the catchment-specific programmes. The project will support and assist the establishment of a Local Committee in each of the pilot catchments and will work with the local committees in developing and agreeing the catchment-specific measures to be implemented.

A Stakeholder Advisory Group will provide external input, guidance and feedback to the project. The Advisory Group will comprise representatives of local and national stakeholder interests, environmental NGO's, academics and others with particular expertise in areas of relevance to the project. The Water Forum (An Foram Uisce) will be consulted and the views of the Forum will be sought on an ongoing basis in relation to the development and implementation of the project.

Project actions

The project will be implemented on a phased basis. Phase 1 will be mainly preparatory and will include project establishment, putting the project governance arrangements in place and

recruiting the core project team. During this period material will be collated on the ecology and natural capital value of high-status catchments, the nature of pressures encountered and a review of best management practices will be undertaken to advise on approaches and types of measures to be implemented to protect landscape ecology and preserve water status. The pilot catchments will be selected during Phase 1 and engagement will commence with local communities and landowners on a long-term vision for managing their catchments and protecting water quality. Discussions will also be initiated with local communities during Phase 1 on a framework of possible measures that may be needed to better manage the catchment in the long-term. This will include consideration of the likely benefits and cost-implications for people living in the catchment. During this period, the project team will establish a project identity and project website, and begin work on creating a vision for the project and promoting the value and benefits of protecting high status waters. Environmental monitoring arrangements will be put in place for each catchment to establish baseline conditions and assess the effectiveness of the programmes to be implemented.

Local area teams will be established during Phase 2 of the project. A strategic management plan will be prepared for each catchment and a locally-tailored programme of measures will be established in consultation with the local community and landowners. Guidance and training on the approach will be provided for landowners and for agricultural and forestry advisors. The implementation programme will be rolled out across all pilot catchments during Phase 2. Ongoing environmental monitoring, public awareness actions (national and local), engagement with landowners and project dissemination will be maintained throughout the project implementation (concrete action) phase.

A summary of the main project actions and outputs is provided below. Further details are provided at Part C of this proposal:

PHASE 1 (2 years)
A. Preparatory actions (elaboration of management plans, obtaining licences and permits, etc.)
A.1: Prepare detailed characterisation of HS Catchments (ecology, natural capital value, main pressures, problems)
A.2: Prepare Framework of HS Measures (Best Practice Measures) and guidance
A.3: Select Demonstration Catchments
A.4: Develop HS catchments RBAP scheme
A.5: Initial community engagement regarding concrete actions
A.6: Investigate land ownership (commonage areas)
A.7: Secure Licenses / Permissions
A.8: Review and elaborate a detailed work programme

PHASE 2 (2 to 5 years)
C. Concrete implementation actions
C.1: Catchment Walkover Investigations
C.2: Follow-up Catchment Investigations
C.3: Catchment strategic management plans
C.4: Deliver training for agricultural and forestry advisors
C.5: Deliver training for farmers, forest operators and relevant practitioners
C.6: Prepare implementation plans in agreement with local landowners
C.7: Implement programmes of measures across all demonstration catchments
C.8: Landuser support for measures implementation in demonstration catchments

D. Monitoring of the impact of the project actions
D.1: Establish environmental monitoring programme
D.2: Ongoing environmental/status monitoring and progress reporting
D.3: Generate community custodianship of HS sites

E. Public Awareness and dissemination actions

E.1 Create project identity
E.2 Website setup for the *Waters of LIFE* Project
E.3 Promotion of HS water bodies and their protection using promotional materials and media
E.4: Networking with other projects, including LIFE projects
E.5 Project launch event
E.6: Promote the project and the benefits of protecting HS waters through community meetings
E.7: Promote the project and the benefits of protecting HS waters through school visits
E.8: End-of-project conference

F. Project management and monitoring of project progress
F.1: Project Establishment
F.2: Development of the project data management systems
F.3: Project and Financial Management and Reporting (including Annual reports, End of Project Report and Recommendations, and independent audit)
F.4: Recruit Locally Based Catchment Teams
F.5: Project After-LIFE Plan
F.6: Integration of the project with national and local policy objectives

Complementary actions
The River Basin Management Plan for Ireland 2018-2021 identifies 384 water bodies with a high-status objective. The catchments of these water bodies are shown on the attached map at Part B2b of this proposal (Map of the General Location of the Project Area). Of these, 243 water bodies are considered to be *Not at Risk* of achieving their objective and the remaining 141 are classified as either *At Risk* or *In Review*. In the case of *At Risk* high-status water bodies, forestry was a significant pressure in 40% of cases, hydromorphological alteration in 34%, agriculture in 28% and peat extraction or disturbance in 13% of cases (Section 5.3, pages 38-45). More generally across the Irish River Basin District as a whole, agriculture, waste water, hydromorphology and forestry are the most prevalent pressures causing water bodies to be *At Risk* of failing to meet their Water Framework Directive objectives (RBMP, Section 5.3.2, pages 40-43). The River Basin Management Plan has identified 190 Areas for Action across the whole River Basin District which will be prioritised for action in the period 2018-2021. These contain a total of 726 individual water bodies, including 64 At Risk high-status water bodies for which measures will be implemented during the current river basin management planning cycle.

The following initiatives identify the complementary actions to be undertaken that are similar to those proposed for funding under the LIFE Integrated Project. Funding for these actions has been confirmed and they will be implemented in the same general timeframe as the Integrated Project but in a different geographical area of the River Basin District:

1: Ireland's Local Authorities Water Programme includes a team of 35 specialist technical staff who were newly recruited in 2018 to work at catchment level as part of the local authority response to drive the implementation of measures in the 190 *Areas for Action* (RBMP, Map 13.1, page 138). This team is undertaking detailed assessments of each action area to establish precisely the activities causing the problem at water body level and the appropriate mitigation measures needed to address them in each case. The work of Local Authorities Water Programme is supported by a new Agricultural Sustainability and Advisory Support Programme. This consists of 30 Sustainability Advisers promoting agricultural best practice in the 190 *Areas for Action,* and across the dairy sector as a whole. The initiative places a strong emphasis on giving advice and support to farmers, facilitating knowledge transfer and encouraging behavioural change as the cornerstone of the drive towards better farming practice.

2: The above Local Authorities Water Programme work is further supported by a team consisting of 12 Local Authority Community Water Officers spread regionally across the River Basin District who work with local community groups to increase public awareness in water

quality and to support local community initiatives which are aimed at protecting water quality and align with the goals of the River Basin Management Plan.

3: At mid/end 2018, the Department of Agriculture Food and Marine approved eight Locally-Led Agri-Environment projects as European Innovative Partnership (EIP) initiatives under the Rural Development Programme 2014-2020 to encourage locally-driven solutions to address water and biodiversity challenges at a local or regional level. Each project will run for 4-5 years. The most significant of these is the Freshwater Pearl Mussel Project which aims to promote farm management tailored to securing the long-term conservation of freshwater pearl mussel (*Margaritifera margaritifera*) in eight priority freshwater pearl mussel catchments in the Irish River Basin District.

The following initiatives identify complementary actions that are different to, but complementary to the actions to be implemented by the LIFE Integrated Project. These actions will be implemented within the catchments of all high-status waters, including within the pilot catchments selected for the Integrated Project:

4: In February 2019, the Department of Housing, Planning and Local Government launched a new expanded grant scheme to facilitate the cost of repairing, upgrading or replacing domestic wastewater treatment systems to support the attainment of water quality objectives in high status catchments and prioritised areas for action (RBMP Section 8.3.2, page 104).

5: Irish Water has recognised the need to support the protection of high-status waters through its Capital Investment Programme aimed at addressing pressures from Urban Waste Water. Eight urban waste water treatment plants discharging to high-status water bodies will have major upgrades completed by 2024. Of these, seven are expected to be completed by 2021.

6: Furthermore as the LIFE IP develops there are a number of organisations who are supportive of this project and have undertaken to apply for funding to provide further complementary actions. In addition to the already committed Locally-Led Agri-Environment Projects referenced above, the Department of Agriculture, Food and Marine has confirmed that it will seek to support relevant new EIP projects in the catchments of high-status waters taking the learnings from the Integrated Project on board. The Kilkenny LEADER Partnership is also working closely with the Local Authority Waters Programme to help increase community engagement to improve water quality, and support River Basin Management Plan implementation in Kilkenny. It is furthermore working with the local authority programme to develop a strategy to engage into the next LEADER programme cycle (post 2020) and recognises the importance of high-status water bodies as an objective to be protected and restored. Kilkenny LEADER has confirmed that it will work with the Local Authorities Water Programme and other LEADER companies in the River Nore catchment to support relevant new projects in the catchments of high-status waters, taking the learnings from the project on board. Similarly the South Kerry Development Partnership will seek further LEADER funding. The OPW have also committed to further funding for water retention measures should these be applicable in the demonstration areas.

Although no other specific interventions or additional measures of an added-value nature (beyond the above complementary actions) are currently envisaged, the co-ordinating beneficiary, intend to liaise with other partners during the project to add to these complementary measures by identifying further opportunities. For example the DHPLG will liaise with the Department of Agriculture, Food and the Marine (an associated beneficiary) to discuss the Agri-Environmental Climate Measures (ACEMs) scheme to determine what possible additional measures would work well towards ensuring the integrity of High Status water bodies and could complement the work of the proposed Water of LIFE Integrated project.

4. Expected results (main outputs and achievements, qualitative and quantitative):

The determination of expected results will take place during the development of the strategic management plans for each project catchment. At that stage, the background work in relation to catchment assessments and development of a suite of measures will allow for accurate predictions of expected outcomes for each catchment. These outcome will be measured in terms of water quality improvements and will contribute to Ireland meeting its commitments in the RBMP.

Because catchment selection will not occur until Phase 1 of the Integrated Project (Action A.3), it is not currently possible to fully determine how many high-status water bodies will be subject to intervention. However, it is estimated that measures would be put in place across some 25,000 hectares of farmland (3,000 hectares in commonage) and 1,265 hectares of privately and publicly owned forestry land.

In any event, at a minimum, during implementation, no deterioration in water quality in the catchments subject to intervention would be expected to be observed, based on water sampling results. After implementation, given the roll out of expertise in protecting all high-status waters, it is expected that Ireland would successfully reverse the decades-long trend in the decline of high-status water bodies.

It should also be noted that while the project will contribute to water quality improvements in a significant (if yet undefined) number of water bodies, the project is also expected to enhance the levels of engagement and ownership among stakeholders in relation to local water bodies, the RBMP and Ireland's water quality objectives. This is especially true for landowners and the public, who are identified in the RBMP as critical stakeholders if the RBMP is to be implemented successfully.

Key Performance Indicators
The following quantitative and qualitative key performance indicators have been estimates to arise by the end of the project:

1. Improved Water Environmental and Climate Performance (including resilience to climate change)
Improved resilience to flooding
- 210 inhabitants (improved conditions) = 1% change of total residents in study area
- 780 hectares of blanket bog (improved conditions) = 10% change of commonage area (1% of study area)
Improved Water Quality
- 138M m3/year = 70% change of water by volume discharging annually from demonstration catchments

2. Sustainable land use, agriculture and forestry
Reforested areas; increase in area under sustainable forest management
- 1,265 ha = 100% change of clear felled area (2% of study area)
Areas of agricultural land under sustainable management
- 25,000 ha = 40% change of lands within the demonstration catchments (33% change within the study area)

3. Improved Nature, Species and Biodiversity
Areas progressing towards habitat improvement or restoration or in a favourable conservation status
- 2,500 ha grassland & 780 ha blanket bog = 10% change grassland & 10% change blanket bog (4% of study area)
Reduction of invasive alien species
- 1 population/ha = 10% change of number of existing populations

4. Economic Performance, Market Uptake, Replication

Employment/Jobs created
- 33.5 FTE = 100% change of HS catchment management jobs
Number of replication / Transfers
- 4 is the minimum number of direct replications for HS existing catchments in Ireland alone (assuming the demonstration catchments cover 1/5 of the HS area). However there are additional opportunities to replicate/transfer in additional HS waterbodies (as yet unidentified), in target areas to restore/improve good to HS waterbodies, and also in other countries/regions (via the network of projects) and the biodiversity sectors/entities (via other initiatives / policy review measure).

5. Communication, dissemination, awareness rising
Number of entities/individuals reached/made aware in awareness raising activities
- 14,000 = 100% change of existing awareness involvement (impacting 70% of study area residents)
Website
- 1 website created
Number of entities/individuals changing behaviour
- 700 = 100% change of RBAPS involvement (impacting 70% change of agricultural sector by direct uptake).

It is further estimated that 5 years after successful *Waters of Life* project completion the DHPLG will incorporate replications of this initiative amongst the measures in subsequent RBMPs. Roll out by relevant stakeholders in two replications, with 6 catchments in each where measures are applied (control catchment excluded) equates to 12 further HS catchments (which should deliver an additional benefit with a 2.4 factor on the initial *Waters of LIFE* project metrics).

Linked to Actions of LIFE IP (short and long term)
The *Waters of LIFE* IP will trial and demonstrate the effectiveness of implementing a locally-tailored suite of 'best practice' measures in an integrated way at the catchment-scale to protect and restore high-status waters. The project will address the full range of main pressure-types found in sensitive high-status catchments in Ireland. It will build technical capacity, know-how and understanding within state bodies and agencies responsible for implementing Ireland's River Basin Management Plan, and will inculcate a sense of custodianship within local communities and landowners living within the catchments of these areas. The project will provide a model for the general roll-out of the approach across all high-status waters in Ireland.

The project will build on existing initiatives and knowledge and provide a practical platform for all stakeholders - state bodies and local authorities, local communities and landowners - to work together to build understanding and appreciation of the value of high-status waters and their landscapes, and to cooperate in implementing an integrated suite of bespoke locally-tailored measures at the catchment-scale for their long-term protection, and for the benefit of local communities.

Ten LEADER/local development companies (details provided) have identified secured funding to support work using personnel with hard and soft skills located within the pilot catchments. These community based local development companies work to develop their local areas to improve the quality of life and support sustainable economic development. This will ensure integrated measures support and local community engagement takes place across landowners/stakeholders in the demonstration catchments and with the wider community and farm families. Their participation in the project is seen as an important platform for the further roll out and promotion of project learnings across their areas.

Learnings and outputs from the project during the implementation stage, will provide ongoing input and support to the more widespread work of the *Blue Dot Catchments Programme* and will inform and strengthen the approach that is currently being developed and implemented

in the catchments of high-status waters across the whole Irish River Basin District (Section 8.3.2, pages 103-105).

Working with local communities and landowners, the project will prepare catchment-specific management plans and implement an integrated locally-tailored suite of measures to protect and/or restore high-status waters in each of five high-status catchments in the Irish River Basin District. Each catchment will be approximately 120-130 km^2 in area. Catchment-wide monitoring will be put in place to undertake ongoing assessment of the effectiveness of measures and to confirm their suitability for application across all high-status waters.

Measures will be implemented in selected demonstration catchments across approximately 750 km^2 of the Irish River Basin District. This represents 20% of the overall catchment-area of high-status river water-bodies in Ireland. The precise nature and number of individual measures to be implemented will be determined when the pilot catchments have been selected, management plans prepared, and consultations undertaken with local communities. However, it is estimated that measures will be put in place across some 25,000 hectares of farmland, [3,000 hectares in commonage] and 15,000 hectares of privately and publicly owned forestry land.

The project will promote the biodiversity value of these landscapes and the importance of protecting their waters through actions to enhance public appreciation of the ecology, ecosystems and natural capital value of these areas, both nationally and at a local level. In addition, the project will help build synergies and strengthen coordination between measures developed for the protection of water quality and measures intended to support biodiversity objectives, in the catchments of high-status waters.

The cross -sectoral nature of Government Departments, local authority, state agencies and local communities involved in the planning, oversight and delivery of the project will build confidence in the overall approach and promote the long-term value of the work amongst public bodies, landowners and local communities. Ongoing learnings from the project will feed into and support the development and elaboration of national policies and strategies for protecting these important water bodies. Outputs from the project will inform the development of the next cycle River Basin Management Plans, as well as the future elaboration of more effective agri-environment and forestry support measures to provide for the long-term protection and management of this important environmental resource.

Linked to complementary actions (short and long term)
By 2021, assessments, investigations and follow-up actions will be undertaken by the Local Authorities Water Programme across 726 water bodies in the 190 *Areas for Action* identified in the River Basin Management Plan for Ireland 2018-2021 to identify the specific activities causing water bodies to be *At Risk* and to ensure follow-up action in relation to the necessary mitigation actions. An increased focus on knowledge transfer aimed at driving behavioural change towards more sustainable farming practice will see up to 5,000 farmers receiving support through the new collaborative Agricultural Sustainability Support and Advisory Programme targeted within the 190 *Areas for Action*. In addition, 18,000 dairy farmers will receive advice on sustainable farming practices under the Dairy Sustainability Initiative.

Local Authorities Water Programme will continue to support local community initiatives aimed at protecting water quality. In 2018, 69 projects were funded through the Local Community Fund administered by Local Authorities Water Programme. These included feasibility studies, support for river trusts, community capacity building, projects on environment awareness, ecological surveys, habitat enhancement and assistance with feasibility and project planning. In 2018, Local Authorities Water Programme also provided technical support to local communities in securing grant aid for two of the eight Locally-Led Agri-Environment projects funded as EIP initiatives under the Rural Development Programme 2014-2020 (referred to above).

The Freshwater Pearl Mussel Project will promote farm management tailored to protecting water quality and securing the long-term conservation of freshwater pearl mussel (*Margaritifera margaritifera*) involving some 450-650 participant farmers across eight priority freshwater pearl mussel catchments in the River Basin District.

Irish Water will complete the upgrade of eight urban waste water treatment plants by 2024 to support the protection of high-status waters. It is furthermore estimated that upgrades to domestic waste water treatment plants will be undertaken to protect or improve water quality in the catchments of high-status waters.

In the longer term, it is envisaged that the learnings from the *Waters of LIFE* IP, in particular the enhanced technical understanding, capacity and know-how derived from undertaking the project, the increased policy awareness and responses resulting from the participation of key policy and local community stakeholders in project delivery, the continuing on-the ground support of the Local Authorities Water Office for local community initiatives aimed at protecting water quality, the experiences gained by local communities relating to the more effective utilisation of financial supports available through programmes such as LEADER, etc, and the increasing support of the Department of Agriculture, Food and Marine for new EIP projects in the catchments of high-status waters, will help promote and mainstream the approach across high-status waters in the Irish River Basin District.

Linked to Ireland's LIFE IP PAF-WILD ATLANTIC NATURE
Subject to funding approval, networking/complementary funding between this *Waters of Life* Project (IPE-0003) and an Irish WILD ATLANTIC NATURE proposal (IPE-0002) would be achieved through continued liaison between the co-ordinating beneficiaries of both projects.

The WILD ATLANTIC NATURE proposal's national level component objectives are:

- To improve stakeholder communication and cooperation in the policy & governance of Natura 2000;

- To improve the insufficient integration and coordination in the mobilisation of complementary funding by maximising synergies with the relevant State and European Structural & Investment Funds (ESIF), particularly agri-environmental schemes under the European Agricultural Fund for Rural Development (EAFRD);

- To increase general public awareness of the Natura 2000 network nationally;

- To improve education and appreciation of the ecological value of the Natura 2000 network nationally and in particular the climate change importance of peatlands;

- To build up capacities by addressing key staffing shortages;

- To build up capacities by meeting key training and guidance requirements.

These national goals are complementary to those of the Waters of Life proposal and therefore create opportunities to strengthen and reinforce the messages from each of the projects.

The regional level, concrete conservation, component objectives of the WILD ATLANTIC NATURE proposal are:

- To develop a sense of community ownership or custodianship towards local peatlands in the Northern & Western Region;

- To secure local community involvement and support with regard to those of the 35 blanket bog SACs where concrete conservation actions will take place;

- To secure the support of landowners, land users and other local stakeholders for management plans to deal with the multiple threats facing these sites including peat extraction, reclamation, overgrazing / undergrazing, burning, afforestation, recreation and some infrastructural development;

- To improve the limited availability of staff proficient in the Irish language for community and landowner engagement in the Gaeltacht areas;

- To undertake surveys of selected blanket bog SACs to assess the current conservation status;

- To carry out baseline site ground surveys to identify specific optimal restoration areas on 13 blanket bog SACs in the NWRA project area (this has already been done for 11 of the 24 project sites/SACs identified for concrete conservation actions);

- To raise water levels by drain blocking with peat / plastic dams on the identified restoration areas of selected project sites to create the necessary conditions for active blanket bog;

- To remove planted and naturally regenerating trees and shrubs;

- To control invasive species (particularly Rhododendron ponticum);

- To improve fire prevention and management on project sites;

- To fence key areas of project sites;

- To remove inappropriate fencing from limited areas of project sites;

- To control grazing on project sites by appropriate means.

Many of these concrete measures proposed would be parallel to those in the catchments of the HS waters under the *Waters of Life* Project and therefore creates the opportunity to share lessons learned as the projects progress.

It is anticipated that the achievement of both the national and regional level objectives listed above will be supported by the following WILD ATLANTIC NATURE proposal Complementary Action objectives:

- To mobilise complementary funding by maximising synergies with the relevant State funding and European Structural & Investment Funds (ESIF), particularly the European Agricultural Fund for Rural Development (EAFRD) by means of Actions F1(1), F2(1) and F3;

- To influence the development of Complementary Actions nationally during the 2021-2027 funding period and beyond by means of Action F3 (arising from the Results Based Agri-environmental Payments Schemes, to be designed and piloted in the IP itself under Actions A2(2) & C3);

- To roll out environmental training / knowledge exchange measures, to be designed and piloted in the IP itself (Actions A2(1) & C2) and targeted at upland hill farmers, during the 2021-2027 funding period and beyond;

- To roll out social employment schemes specifically targeted at the management and conservation of the Natura 2000 network, to be piloted by the IP itself in the Gaeltacht areas (Action C8), during the 2021-2027 funding period and beyond;

- To investigate and consider the possibilities for mobilising additional EU LIFE funding for "traditional" projects focussed on habitats and species prioritised in PAF14 (Action F3);

- To investigate and consider the possibilities for mobilising additional EU ERDF funding under Interreg V B 2014-2020 and beyond for projects focussed on habitats and species prioritised in PAF14 (Action F3);

- To maximise the significant potential in nature for sustainable tourism, and to mobilise funding for selected tourism infrastructure during the 2021-2027 funding period and beyond (Actions A8, E11 & F3);

- To deliver primary and second level environmental education and to facilitate community engagement in nature conservation (Actions A2, A4, C2, E6, E10 & F5).

Again many of these complementary actions are compatible with those envisaged under the *Waters of Life* Project which creates possible synergies during project delivery stages.

If both projects receive funding, the DHPLG anticipates working closely with the Nature Project co-ordinating beneficiary, particularly during Phase 1 of the projects, to build strong working relationships between the project teams and explore complementary funding opportunities.

Geographical overlaps, in terms of the concrete measures, can be managed by liaison between these projects regarding Phase 1 catchment selection, with discrete measure trials enabling project monitoring data that provides clear cut evidence regarding measure effectiveness.

Ongoing liaison can share emerging technical and stakeholder lessons and help refine approaches of each project and synergistic opportunities, for example on capacity building and dissemination events.

It is also anticipated that both co-ordinating beneficiaries will sit on the steering groups of the respective projects. This will help to ensure that no overlaps will occur and that opportunities for collaborative development of future phases will be maximised.

5. Expected contribution of the project to the implementation of the target plan/strategy

LIFE IP

The protection and restoration of high-status waters is an important objective of Ireland's River Basin Management Plan. Within the period and geographical scope of the LIFE Integrated Project itself, a comprehensive suite of measures for the protection and/or restoration of high-status waters will be implemented across 750 km^2 of the catchment area of high-status waters in the Irish River Basin District. This represents 20% of the area covered by all high-status river catchments in the Irish River Basin District.

In addition to implementing measures within the IP project area itself, early learnings and outputs from the project will support the ongoing development of the *Blue Dot Catchments Programme* and will inform the approach to be taken more generally across a further 64 high-status objective water bodies identified for action during the period of the current River Basin Management Plan (to 2021). Task A.1, will undertake a review of current and recent high-status sites, describe the main features of these sites and their catchments and will inform the interpretation of catchment features driving changes in status. Outputs from this task will help identify high-status sites that are at greatest risk based on cumulative catchment pressures, and sites where interventions are most likely to be effective. Task A.2 will provide a comprehensive framework of measures for protecting and restoring high-status waters. The framework will constitute a major resource for achieving RBMP objectives in relation to

managing high-status waters nationally. The Integrated Project will additionally make an important contribution to promoting an enhanced public appreciation of the ecology, ecosystems and natural capital value of high-status waters and their catchments, and will give added support and impetus to the wider application of protective measures across all high-status catchments (via a suite of Public awareness and dissemination actions).

Complementary actions
The expected contribution of the complementary actions to implementation of the River Basin Management Plan is that by 2021 water quality improvements will be achieved in 726 water bodies across the Irish River Basin District and of these, 152 water bodies will undergo an improvement in water quality status.

6. Main stakeholders involved in the project:

The Integrated Project will be led by the Department of Housing, Planning and Local Government which is has primary responsibility at a policy level for implementing the Water Framework Directive and the preparation and oversight of River Basin Management Plans. The Department of Agriculture, Food and Marine has policy responsibility in relation to agriculture and will provide essential input to the project in relation to rural development, forestry, agri-environmental matters, including farm-support payments and control. The National Parks and Wildlife Service of the Department of Culture, Heritage and the Gaeltacht manages the State's nature conservation responsibilities and is responsible for the designation and protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas. The Office of Public works is an Office of State at the Department of Public Expenditure and Reform with responsibility *inter alia* for flood risk management. The Environmental Protection Agency is the national agency responsible for protecting and improving the environment. It has specific responsibilities in relation to the Water Framework including advising the Minister on measures to be included in River Basin Management Plans. Local Authorities are responsible for the co-ordinated delivery of measures at regional and local level for River Basin Management Plan implementation. Teagasc is the national Agriculture and Food Development Authority and provides research, advisory and education services for the agriculture and food industry and rural communities. Coillte is a State owned company and is Ireland’s largest commercial forestry company.

Local Development Partnerships, who administer Ireland’s Social Inclusion programmes are also supporting the project actions, in addition to complementary measures.

A representative or representatives of community organisations will be included as a project stakeholder given the importance of working with local landowners and communities to the success of the project. However, it is yet premature at this stage to finalise the precise nature of Community representation on the project as this will depend on catchment selection.

7. Long term sustainability (including capacity building):

The purpose of the Integrated Project is to build national capacity and know-how in relation to the challenging task of protecting high-status waters. This is a legal responsibility on Ireland under the Water Framework Directive, and specific measures have been included in the River Basin Management Plan for Ireland 2018-2021 towards this end. A new River Basin Management Plan will be prepared to cover the period 2022 to 2027. The new plan will include further elaboration of these measures and will take account of the initial learnings and outputs from the Integrated Project as these measures are being developed.

It is further envisaged that outputs from the Integrated Project will be adopted on an incremental basis as a ‘best-practice’ approach for the implementation of measures within the catchments of all high-status waters, and that the approaches developed and demonstrated by the project will become a ‘standard’ way of working across the River Basin District more generally.

The nature of project stakeholders and the very close links proposed between the Integrated Project and governance structures already in place for implementing the River Basin Management Plan will ensure that the project outputs will be taken on board in the elaboration of future policies for the protection of high-status waters, and in the development of future River Basin Management Plans.

8. a) Is your project significantly climate related? **Yes** ☐ **No** ■

b) Is your project significantly biodiversity-related? **Yes** ■ **No** ☐

With regard to climate, the LIFE Integrated Project will operate in tandem with the DHPLG's Water Quality and Water Services Infrastructure Climate Adaptation Plan, which is scheduled for publication in September 2019. Although the LIFE Integrated Project would have some benefits in respect of mitigation, such as the rewetting of peatland and organic soils and, possibly, the attenuation of peat cutting, these benefits are expected to be modest in the context of Ireland's greenhouse gas emission mitigation targets for 2030. There are not expected to be significant defined benefits for adaptation, beyond an enhanced understanding of the possible future effects of climate change on high-status waters over time in the 'control' catchment.

If you consider your project to be significantly climate or biodiversity-related (you marked 'yes'), please explain why:

The United Nations Convention on Biological Diversity in 1992 defined biodiversity as "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems". It established an agreement amongst the co-signers to develop efforts on biodiversity protection.

The introduction of the EU Water Framework Directive (2000/60/EC) brought to light that good water quality was more than the preservation of the chemical aspect but widened it to the whole ecosystem by defining the Ecological Quality Status. It defined good ecological status as a slight departure from the biological community which would be expected in conditions of minimal anthropogenic impact (European Commission, 2016) and established as an initial overall objective the achievement of that ecological status for all European Member States by 2015.

In general, good ecological status/potential of a water body will contribute to favourable conditions for increased biodiversity (*Schmedtja et al*, 2011). However, beyond the fact that achieving the good ecological status objective still remains a challenge (*Voulvoulis et al*, 2017), there are cases in which just the good ecological status may not be sufficient to meet high biodiversity thresholds. For example, *Aroviita el al,* (2009) demonstrated that reaching "good quality status" was not enough to increase the occurrence and abundances of threatened species that only occurred in "high ecological status rivers". Freshwater Pearl mussel *Margaritifera margaritifera*, a critically endangered species, listed on Annex II and Annex V of the EU Habitats Directive, may need lower nutrient concentrations than those needed for good ecological status (*Schmedtje et al,* 2011). High status sites are, therefore, required to maintain a high level of diversity (*Hering,* et al 2010).

Although the WFD prohibits degrading a waterbody ecological status, *Hering et al,* (2010) raises the necessity for a higher level of conservation concern for HES. The author suggests the creation of a network of "high status sites" as a key measure to protect aquatic biodiversity.

While there has been some criticism of previous agri-environmental schemes and their benefits for diversity (OECD, 2010), increased biodiversity has been seen in GLAS and with

the introduction of results based agri-environmental schemes implemented as part of Burren/Kerry/Duhallow LIFE projects and Pearl Mussel EIP. The Best Practice Measures developed and implemented in this LIFE-IP to protect and restore HES water bodies, and the complementary schemes that will run post LIFE, will increase biodiversity.

This LIFE-IP will have also some climatic benefits with the likely introduction of natural water retention measures (NWRM) such as re-wetting of peatland and organic soils, which has been found to reduce GHG emissions and increase C sequestration function characteristic of natural (non-degraded) peatlands (http://www.epa.ie/researchandeducation/research/researchpublications/researchreports/Research_Report_236.pdf EPA, 2012). Other NWRMs, such as buffer strips which provide effective water infiltration and can also significantly reduce the amount of suspended solids, nitrates and phosphates originating from agricultural run-off (http://nwrm.eu/measures-catalogue), will also be considered.

GENERAL DESCRIPTION OF THE AREA(s) TARGETED BY THE PROJECT

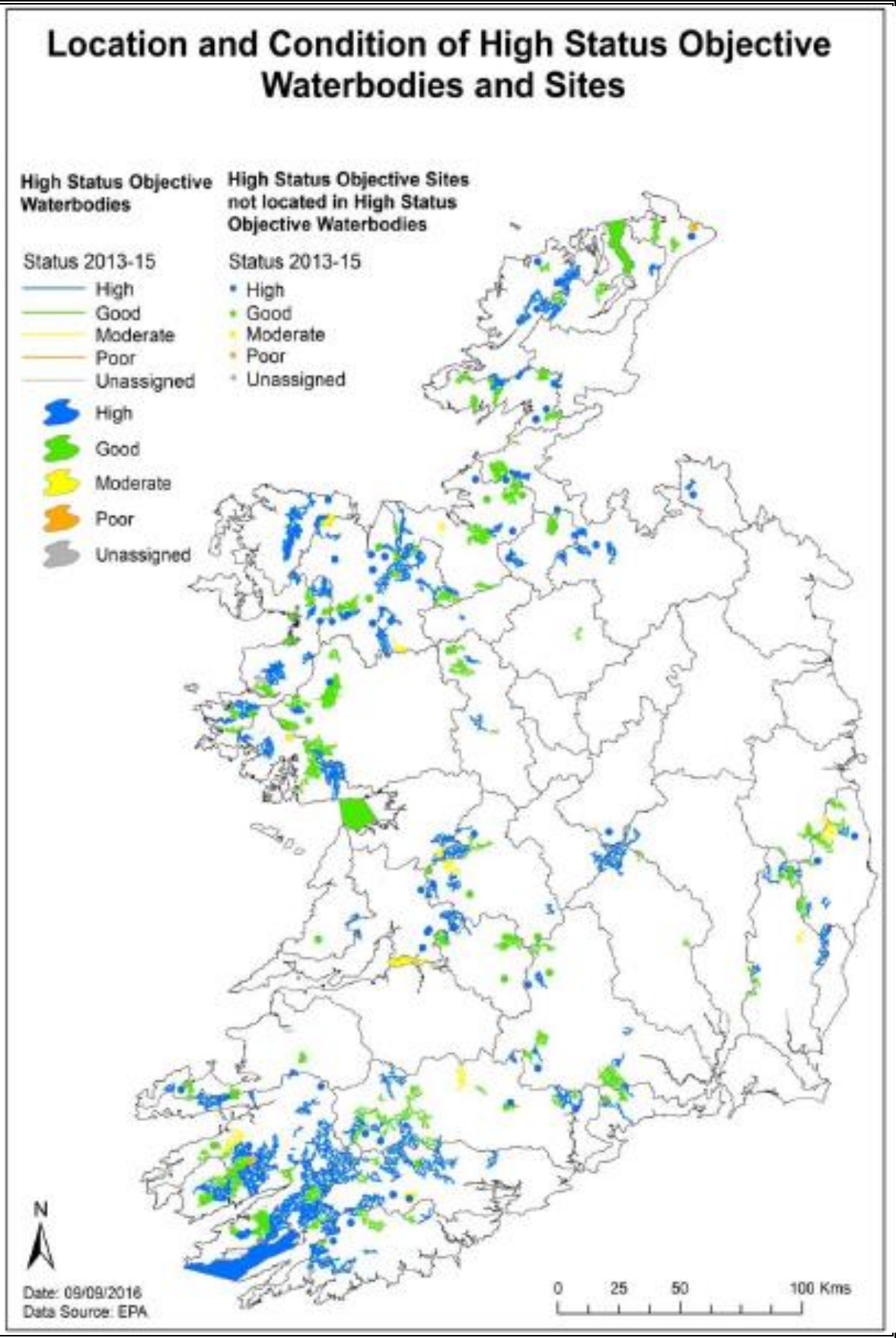
Name(s)/Definition of the project area(s): *Waters of LIFE* high-status waters

Actions A.1 – A.3 will select the specific catchments to be included within this *Waters of LIFE* IP project from Ireland's high-status water bodies. The location and extent of water bodies with a high-status objective is shown on the map provided at section B2a of the proposal. The high status river catchments cover an area of 3,800 km^2 and comprise 5% of the Irish River Basin District. They are in the main located in less densely populated areas. In Ireland, as elsewhere, many high-quality waters are found in the headwaters of rivers containing ecological communities of fundamental biodiversity importance.

Comments:
These areas tend to be more remote and less economically developed than other parts of the country. They are generally not intensively farmed. Because of their ecological sensitivity, relatively minor changes in land-use e.g. field drainage for farming purposes, low levels of agricultural activity, turf cutting, one-off housing and forestry activities can impact negatively on water status if land use in these areas is not very carefully managed.

The distribution of these high status water bodies as influenced the group of LEADER and local development companies which have provided support to this project as associated beneficiaries and/or for complementary measures.

MAP 1: MAP OF THE GENERAL LOCATION OF THE PROJECT AREA



All maps must be provided in an A4 or A3 format

DESCRIPTION OF THE STRATEGY FOR THE IMPLEMENTATION OF THE OVERALL PLAN

The LIFE Integrated Project will bring together the key actors to work jointly on the selected pilot catchments. This will allow the organisations to work together to plan, demonstrate and develop long-term approaches to the protection of high-status waters and the sustainable management of their catchments.

Key to the success of this joint working strategy will be the quality of the recruited project management team and the recruited locally based catchment teams. As our collective knowledge develops, informed by additional work by the Blue Dot Programme and other programmes under the River Basin Management Plan the DHPLG expects the understanding of high status catchments to develop rapidly.

Short term (at least first 2.5 years):
The Integrated Project is intended to build capacity and develop long-term institutional working arrangements that will provide for the effective implementation of measures to protect high-status waters in Ireland. In the short-term, the project will serve as a focal point to bring the key actors together to jointly work on a number of selected pilot catchments.

During the preparatory phase of the project a training needs assessment will be undertaken, highlighting any shortcomings as regards knowledge / experience (for example some issues in the specialist area of hydromorphology). The assessment will lead to the preparation of a capacity building programme to address these identified constraints regarding lack of knowledge/experience either at a technical or institutional level, on how to effectively implement the commitment in Ireland's River Basin Management Plan for the protection of High Status waters.

Each partner chosen to participate in the project has a vital role to play in relation to the protection of high-status waters; for example, the Department of Agriculture, Food and Marine (DAFM) and the Forest Service of the DAFM are responsible at a policy level for forestry and agri-environment matters, including farm-support payments and control. The Integrated Project will provide an essential new focus on the need to protect high-status waters, create an awareness of the value of this important environmental resource and provide a platform for the various project partners and stakeholders to work together to demonstrate and bring forward long-term approaches for the protection of these waters and the sustainable management of their catchments.

Long term (beyond 2.5 years):
During the implementation phase the capacity building programme will be implemented to enhance knowledge for all relevant institutional and technical programmes. Action C.4 provided the details of this programme which will be reviewed at steering group level during the project to ensure its appropriateness and inclusive of relevant stakeholders as the project participant lists emerges at catchment level.

In the longer term, it is intended that the learnings from the project will be transferred to the catchments of all high-status waters in the Irish River Basin District. Currently, the knowledge and experience does not sufficiently exist, either at a technical or institutional level, on how to effectively implement the commitment in Ireland's River Basin Management Plan for the protection of high-status waters. Different Government Departments and agencies have individually brought forward specific initiatives, however there is no overall coherent approach that can be applied in an integrated way at a catchment-wide scale to protect these waters.

The project has been set up so that that it sits within (and works very closely alongside) the newly established governance structures for implementing Ireland's River Basin Management Plan. Strong links will be maintained between the project and River Basin Management Plan implementation through common membership / formalised reporting between the Steering Committee of the Integrated Project and the Water Policy Advisory Committee, the National Co-ordination and Management Committee, the National Technical Implementation Group and Local Authority Regional Structures established to oversee delivery of Ireland's River Basin Management Plan (Figure 1 at B1.1).

It is intended, as the project progresses, that learnings from the project will be incrementally adopted as 'best practice' across the wider *Blue Dot Catchments Programme* operating in parallel to the Integrated Project and separately supported by the Local Authorities Water Programme. Importantly, outputs from the project and the approaches developed will help elaborate more coherent national policies for the protection of high-status waters and project outputs and learnings will inform the development of future River Basin Management Plans.

EU ADDED VALUE OF THE PROJECT AND ITS ACTIONS

Extent and quality of the contribution to the objectives of LIFE

There has been a continued long-term decline in the condition of high-status waters in Ireland. The loss of high-status waters has been identified as an important issue within Ireland and across Europe. Their protection and restoration is one of the key underpinning principles of the Water Framework Directive. This is recognised with appropriate commitments contained within Ireland's second cycle River Basin Management Plan. The purpose of the *Waters of LIFE* IP is to develop, test and demonstrate a best practice solution to effectively address this challenge in the Irish River Basin District. The project will develop an integrated approach which deals with all pressures at a catchment scale, and encompass technical, policy and stakeholder solutions which will facilitate, in time, full implementation of measures across the catchments of all high-status waters in the Irish River Basin District.

The project will promote better environmental governance by broadening stakeholder involvement in developing the programme, and promote awareness raising and knowledge of sustainable development in the catchments of high-status waters. Because of the nature of stakeholders involved in the project, it will act as a catalyst to promote the integration and mainstreaming of water policies into other policy areas e.g. agriculture and forestry, and will strengthen the understanding, capacity and support of these actors in the water area. The project will furthermore promote more effective compliance with Union environmental legislation by promoting the development and dissemination of best practice approaches.

As a significant proportion of water-dependant SAC's in the Irish River Basin District overlap with high-status waters, and as the measures proposed will, in the main, involve implementing habitat/landscape-management approaches aimed at delivering ecological and water quality improvements, the project will make a significant contribution to the development and implementation of Union policy in the area of biodiversity.

Extent and quality of the mobilisation of other funds

Funding is confirmed for the following complementary actions which are listed at section B1.3:

1: The Department of Housing, Planning and Local Government has confirmed funding for the work of the Local Authorities Water Programme during 2019, 2020 and 2021. The cost of this programme is €5,919,410 per annum (on average) for each of the three years. The money is provided from national funds and, subject to a review of the effectiveness of the programme, it is envisaged that similar funding levels will be made available for the next river basin planning cycle (2022-2027).

2: An amount of €2,886,183 per annum is confirmed for 2019, 2020 and 2021 to support the work of the Agricultural Sustainability and Advisory Support Programme. The programme is jointly funded by the Department of Housing, Planning and Local Government, the Department of Agriculture, Food and Marine and the Irish Dairy Industry. Subject to a review of the effectiveness of the programme, it is envisaged that similar funding levels will be made available for the next river basin planning cycle (2022-2027).

3: The Department of Agriculture Food and Marine (DAFM) has confirmed funding for eight Locally-Led Agri-Environment projects to encourage locally-driven solutions to address water and biodiversity challenges at a local or regional level. These will be funded under the Rural Development Programme 2014-2020 in the total amount of €18.6 million over the next 5 years.

4: The Department of Housing, Planning and Local Government has launched a new expanded grant scheme to facilitate the cost of repairing, upgrading or replacing domestic waste water treatment systems in order to support the attainment of water quality objectives in high-status catchments and prioritised areas for action identified in the River Basin Management Plan. A capital provision of €1.25 million has been made for 2019 and whilst the emerging level of demand will be kept under review, similar funding is anticipated for 2020 and 2021. Upgrades are anticipated at an estimated 1,500 domestic waste water treatment systems in the catchments of high-status waters during this period.

5: Irish Water has confirmed funding to deal with urban waste water pressures at eight urban waste water treatment plants discharging to the catchments of high-status waters. These works are estimated to cost €49.7 million and will be paid for from national funds. All upgrades will be completed by 2024.

6: Furthermore as the LIFE IP develops there are a number of organisations who are supportive of this project and have undertaken to apply for funding/or match funding to provide further complementary actions. In addition to the already committed Locally-Led Agri-Environment Projects referenced above, the Department of Agriculture, Food and Marine has confirmed that it will seek to support relevant new EIP projects in the catchments of high-status waters taking the learnings from the Integrated Project on board. The Kilkenny LEADER Partnership is also working closely with the Local Authority Waters Programme to help increase community engagement to improve water quality, and support River Basin Management Plan implementation in Kilkenny. It is furthermore working with the local authority programme to develop a strategy to engage into the next LEADER programme cycle (post 2020) and recognises the importance of high-status water bodies as an objective to be protected and restored. Kilkenny LEADER has confirmed that it will work with the Local Authorities Water Programme and other LEADER companies in the River Nore catchment to support relevant new projects in the catchments of high-status waters, taking the learnings from the project on board. Similarly the South Kerry Development Partnership will seek further LEADER funding. The OPW have also committed to further funding for water retention measures should these be applicable in the demonstration areas.

In Ireland, the Department of Agriculture, Food and Marine (DAFM) manage the implementation of measures and administration of payment schemes under the CAP. DAFM is also an associated beneficiary to the proposed LIFE IP project. CAP measures are applied on a national basis and all farmers are eligible to enter any schemes operated under CAP Pillar 2 by DAFM.

The measures proposed in the project will be locally-led, bespoke measures to protect high status waters and will operate independently to any agri-environmental scheme operated under CAP rules. Any farmers that participate in the proposed LIFE IP project will be prohibited from implementing a project-specific measure on their land (and benefitting from the RBAP scheme) where that same measure is available to them under any agri-environmental scheme funded through CAP.

In relation to the mobilisation of other funds from the DHPLG; which includes funding for the Local Authorities Water Programme, Agricultural Sustainability, Support and Advisory Programme, and domestic waste water treatment system grants; these funding streams remain within the complete control of the Co-ordinating Beneficiary and, as such, are considered to be all-but guaranteed, given their ongoing nature. Therefore, difficulties and shortcoming related to their mobilisation are not foreseen realistically, save for a national-level economic/fiscal crisis.

The DAFM funding, in respect of Locally-Led Agri-Environment projects, has already been confirmed in the context of the existing Rural Development Programme 2014-2020. Again, accordingly, difficulties and shortcoming related to their mobilisation are not foreseen realistically, save for a national-level economic/fiscal crisis.

Finally, Irish Water's investment in urban waste water treatment plants has already been approved at a national level and, again, as such, is all-but guaranteed, save for a national-level economic/fiscal crisis.

Quality of multi-purpose mechanism, synergies and integration
In addition to responding to the specific challenge of addressing the loss of high-status waters and delivering on Ireland's obligations under the Water Framework Directive, the *Waters of LIFE* Project creates synergies with the objectives of other EU policies beyond the core target of the project (including the Habitats and Birds Directives regarding biodiversity and the Flood Directive with regard to water retention). The following collateral benefits are reflected in the project objectives and outcomes:

1: Environmental Governance and Information – awareness raising on WFD obligations and targeting authorities and other actors who can contribute to identifying solutions to be included in River basin Management Plans, and through joint planning exercises promote coordination between the objectives of the Integrated Project and other policy areas to increase the contribution of, for example, the forestry and agriculture sectors to biodiversity and water quality improvement;

2: Biodiversity actions aimed at implementing Target 2 of the Biodiversity Strategy through the integration of actions to maintain ecosystems and their services into the activities of other public actors and restoring degraded ecosystems;

3: To support EU and global ambitions to halt biodiversity decline by protecting a network of EU high-status water bodies for the preservation of aquatic biodiversity.

Replicability and transferability
The Integrated Project has been set up as a pilot project with very close links to the governance structures already in place for implementing Ireland's River Basin Management Plan. It is intended that the learnings and outputs from the project will be adapted on an incremental basis as a 'best-practice' approach for the implementation of measures across the catchments of all high-status waters in the Irish River Basin District over time, and that the approaches developed by the project will become a 'standard' way of working within the catchments of all high-status waters.

Building on the recommendations and guidance developed as part of the proposed *Waters of Life* IP, it is anticipated that actions will be implemented on a wider geographical scale in other high-status catchments as part of Ireland's third and successive River Basin Management Plans. As outlined in B1.4 - Expected Results, and in the project's Key Performance Indicators, the roll-out by the co-ordinating beneficiary and relevant stakeholders of two replications of the project, with 6 catchments in each where measures are applied. This will potentially result in the extension of the RBAP scheme into 12 further high status catchments.

Funding for the replication of the actions will be made available through the Exchequer as part of the normal national budgetary cycle.

In addition, the beneficiary organisations will continue to train their staff in the development and implementation of measures and implementation plans/actions for high-status sites. All the foregoing will be facilitated by the development of an After-LIFE Conservation Plan for use by relevant staff.

Transnational, green procurement, uptake of research results:
The *Waters of LIFE* IP project is concerned with Irish high-status water bodies. However, the approaches developed can become a 'standard' way of working within the catchments of all high-status waters. The dissemination of findings and guidance arising from the Integrated

Project will take place in the form of knowledge transfer activities. A network of relevant parties will be established and network seminars for example will be organised to share information. Therefore, the approaches developed by the Integrated Project may be adopted on a transnational scale, and benefit the sustainable management of other EU high-status water bodies.

Green procurement will be a core element of all approaches developed at a local level within the Integrated Project. The development of a green procurement program and a green purchasing policy will be key deliverables in relation to supporting green procurement.

A green procurement program will be developed and implemented. This will require a life cycle assessment of the environmental impacts of products or services and a set of criteria against which purchase and contract decisions are made.

A green purchasing policy will be adopted which will select materials and equipment based, inter alia, on environmental impact (e.g. energy efficiency, waste, dangerous chemicals) as well as other factors such as availability and cost.

This will ensure that components are sourced from natural and recyclable substances where possible. In addition, the use of products and services of recognised Eco labelling schemes will be favoured. Finally, effective planning prior to any procurement of products or services will ensure that only what is required is purchased, therefore reducing waste.

The extensive application of green procurement will also be supported at a national level. At the core of the Integrated Project is investment in sustainable solutions, which in themselves promote management in a natural way. Thus, the anticipated roll-out of the approaches developed for high-status waters will promote further investment in sustainable management solutions that cause minimal adverse environmental impacts.

The IP will actively seek opportunities to collaborate and learn from the experiences gained through a number of projects which have objectives linked to the protection and restoration of water bodies, community engagement and/or biodiversity. Firstly, an assessment of relevant Irish and European projects will be conducted. Following this, representatives from these projects within Ireland will be invited to the IP launch event and invited to give a short presentation focusing on their projects work and objectives. This will offer the opportunity to highlight to the IP team members the current work being undertaken in Ireland, links that can be formed and information that can be exchanged. Furthermore, funding will be allocated to allow project members to visit a relevant European project. This will create an opportunity to learn how other European countries are approaching similar water quality issues and share best practice ideas. In addition, it is anticipated that representatives from the IP will attend external meetings and conferences throughout the lifetime of the project. As a result of these actions a partnership will be formed with other EU LIFE and non-LIFE funded projects both within Ireland and on a wider European scale. This will establish the opportunity for networking across projects to facilitate the exchange of information and research findings.

In advance of this proposal Ireland's EPA (under it's STRIVE research programme), with DHPLG support, brought forward a High Status Sites Project leading to the development of Ireland's Blue Dot Programme. The research undertook comprehensive review of measures and lessons learned, linked to EU drivers and in an Irish context as follows:

The Birds (79/409/EEC) and Habitats (92/43/EEC) Directives

1. DHPLG, EPA and NPWS to liaise to further strengthen the co-ordination and implementation of the Birds, Habitats and Water Framework Directives. The key aim should be the harmonisation of the classification and management for favourable conservation and high status water bodies. Discussions should also include consideration of how alien species, other than zebra mussel, impact unfavourably on conservation and high status classifications.

2. Establish a defined strategic link between high status sites and protection nature conservation areas under the Birds and Habitats Directives. The Freshwater Pearl Mussel Regulations provide a notable example of how a species action plan has been backed up with adequate legislation, and effective policies including the monitoring of the effectiveness of measures implemented.
3. Establish additional measures for protected species and habitats, for example Atlantic salmon.
4. Discuss the suitability of adopting the 'Activities Requiring Consent' approach within high status catchments to control unregulated activities. This can, where appropriate, be facilitated through the new Planning and Development Act (2010).
5. Consideration could be given to extending statutory protection under the Habitats Directive to high status water bodies currently not in the cSAC network, and to restoration of water bodies to reach high status in order to provide a more comprehensive and effective network of high quality aquatic habitats, including those that may fall below the reporting size thresholds for the WFD.

The Nitrates Directive (91/676/EEC)
1. Nitrates derogation applications to be referred to EPA/NPWS if located within a high status catchment.
2. The DAFM to undertake a risk assessment to quantify the impacts from animal manures in high status catchments.
3. DAFM farm data sets to be made fully available to both the LAs and the EPA in GIS format. This will allow for more targeted local actions to control diffuse pollution from agricultural sources.
4. A review of the closed period for spreading slurry to be undertaken, preferably by Teagasc, and the DAFM to adopt findings in subsequent revisions to the Nitrates Action Plan.
5. The movement of manures between holdings, and between catchments should be fully traceable, through a permitted system. Permit applications should be screened if movement is to a high status catchment, and the LAs concerned notified for their comments/approval. Regulations may be needed to facilitate this system.
6. High status catchment specific farm plans should be developed that will maintain reduced catchment inputs and should include measures such as:
- maintenance of cattle densities of B1 ha-1:
- non-enrichment of currently un-enriched soils;
- non-enrichment of identified overly enriched soils;
- soil testing to become mandatory in high status catchments, with farmers required to demonstrate, through soil tests every 3_5 years, the need for application of inorganic fertilisers with a soil P test, and to deduct P applied in manure in calculating inorganic loading;
- the addition of P to peatland soils should be prohibited unless demonstrated to have minimal potential impact. These should apply especially (under the WFD) to protected areas of peatlands or those areas with drainage waters to high status sites;
- no soiled water should be spread unless demonstrated to have no potential to contaminate high status sites, groundwaters and turlough cSAC;

7. The above high status catchment farm agri-environmental scheme should be monitored for its effectiveness to protect high status catchments, and updated as required based on the results of monitoring.
8. An agricultural catchment programme (ACP), or supplement to the existing ACP, should be considered to investigate agricultural pressures within high status catchments. Emphasis should be on the effects of low- to moderate-intensity activities, should investigate nutrient concentrations, soil properties and pathways. The focus of the programme should be on establishment of pressure types and scales, and development of practical mitigation measures that can be applied at the local level.

The Industrial Emissions Directive (2010/75/EU)
1. High status water bodies should be designated as sensitive waters under the Urban Waste Water Treatment Regulations (S.I. No. 684 of 2007).

2. All municipal plants whose discharges have the potential to impact high status sites should be licensed with specified monitoring, irrespective of capacity, i.e. a certificate of authorisation is not sufficient

3. Phosphorus emissions can be reduced through the use of non-phosphorus detergents. Further liaison with the soaps and detergents industry for development of zero or low phosphorus detergents is recommended. This could include public education, especially in parts of the country where high status sites are concentrated.

Sewage Sludge Directive (86/278/EEC)

1 The licensing condition, and location of spreadlands should be clearly identified and available to the DAFM, LAs and the EPA.

2 Soil testing frequency associated with spreadlands should be increased to every 3–5 years.

Environmental Impact Assessment Directive (2011/92/EU)

1. EIA needs to incorporate the possibility of impact on a high status water body.
2. Locations of high status sites need to be contained within the LA GIS layers.
3. The EPA should be a statutory consultee, unless provision is provided to ensure appropriate local (and public) authority expertise, so that there is an authoritative and competent opinion provided on all proposed developments that may impact those sites.

To complement this list of EU policy level measures, a review of ongoing catchment management initiatives (including agricultural and water quality management projects, drinking water protection, conservation projects) identified the following best practice measures/lessons learned in an Irish context:

Good Agricultural Practice Measures (from various sources)

- Take all steps to minimise soiled water produced in a farmyard.
- Ensure that rainwater from roofs and clean yards and water flowing from higher ground onto a farmyard is diverted without contamination to a clean water outfall and is not allowed to enter soiled yards. Ensure rainwater gutters and downpipes are maintained in good working condition.
- All slurry, soiled water, effluents, farmyard manure etc. produced in a building or yard, shall be collected and held in a manner that prevents run-off or seepage, directly or indirectly, to groundwaters or surface waters.
- The occupier of a holding shall not cause or permit slurry, soiled water, effluents, farmyard manure etc., to enter waters.
- All storage facilities for slurry, soiled water, effluents, farmyard manure etc. shall be maintained and managed in good condition.
- New storage facilities shall be designed, sited, constructed, maintained and managed to prevent run-off or seepage into groundwaters or surface water, and comply with construction specifications of DAFM.
- The capacity of storage facilities for livestock manure and other organic fertilisers, soiled water and effluent from dungsteads, farmyard manure pits and silage pits shall be adequate to provide for storage for such a period as to comply with these Regulations.
- An occupier shall have due regard to the storage capacity which may be required during periods of adverse weather conditions. The application to land of livestock manure or soiled water is precluded.
- The capacity of facilities for the storage of effluent produced by ensiled forage and other crops shall equal or exceed the capacity specified in Table 5 of Schedule 2, and for soiled water being shall equal or exceed the capacity required to store all soiled water likely to arise on the holding during a period of 15 days The capacity of facilities for storage of livestock manure may be less than that specified in Article 10, 11, 12 or 13, as appropriate, in the case of a holding where the occupier has a contract providing exclusive access to adequate alternative storage capacity located outside the holding, or for access to a treatment facility for livestock manure, or a contract for the transfer of the manure. Storage

capacity may also be less in certain cases where deer, goats, sheep and livestock (other than dairy cows) are outwintered subject to specified maximum stocking rates and other conditions.

- The amount of fertiliser applied to promote the growth of a crop shall not exceed that specified in the Regulations. Chemical fertiliser shall not be applied to land within 2m of any surface waters.
- Organic fertiliser or soiled water shall not be applied to land within 200m of an abstraction point supplying 100m3 or more of water per day or serving 500 or more persons; 100m for schemes supplying 10m3 or more or serving 50 or more; 25m of any abstraction of water for human consumption; 20m of lake shoreline; 15m of exposed cavernous or karstified limestone features; 5m of any surface water (not a lake), or 10m where slopes are >10% or for 2 weeks preceding and following the periods specified in Schedule 4.
- Alternative landspreading setback distances may be set by the Local Authority on the basis of technical and risk assessments and prior assessments.
- Where farmyard manure is held in a field prior to landspreading it shall be held in a compact heap and shall not be placed within 250m of an abstraction point supplying 10m3 or more of water per day or serving 50 or more persons; 50m of any other abstraction source; 20m of a lake shoreline; 50m of exposed cavernous or karstified limestone features (such as swallow-holes and collapse features); 20m of other surface waters (other than a lake).
- Farmyard manure shall not be held in a field at any time during the periods specified in Schedule 4.
- Silage bales shall not be stored outside of farmyards within 20m of waters or a drinking water abstraction point in the absence of adequate facilities for the collection and storage of any effluent arising.
- No cultivation shall take place within 2m of a watercourse identified on the OSI 1:10560 map except in the case of grassland establishment or the sowing of grass crops.
- Supplementary feeding points shall not be located within 20m of waters and shall not be located on bare rock.
- Livestock manure, other organic fertilisers, effluents, soiled water and chemical fertilisers shall be applied to land in as accurate and uniform a manner as is practically possible.
- "Organic and chemical fertilisers or soiled water shall not be applied to
- land in any of the following circumstances—

(a) the land is waterlogged;
(b) the land is flooded or likely to flood;
(c) the land is snow-covered or frozen;
(d) heavy rain is forecast within 48 hours, or
(e) the ground slopes steeply and there is a risk of water pollution having regard to factors such as surface runoff pathways, the presence of land drains, the absence of hedgerows to mitigate surface flow, soil condition and ground cover."

- Organic fertilisers or soiled water shall not be applied to land—

(a) by use of an umbilical system with an upward-facing splashplate,
(b) by use of a tanker with an upward-facing splashplate,
(c) by use of a sludge irrigator mounted on a tanker, or
(d) from a road or passageway adjacent to the land irrespective of whether or not the road or passageway is within or outside the curtilage of the holding."

- Soiled water shall not be applied to land—

(a) in quantities which exceed in any period of 42 days a total quantity of 50,000 litres per hectare, or
(b) by irrigation at a rate exceeding 5 mm per hour."

"In an area which is identified on maps compiled by the Geological Survey of Ireland as “Extreme Vulnerability Areas on Karst Limestone Aquifers”, soiled water shall not be applied to land—
(a) in quantities which exceed in any period of 42 days a total quantity of 25,000 litres per hectare, or
(b) by irrigation at a rate exceeding 3 mm per hour unless the land has a consistent minimum thickness of 1m of soil and subsoil combined."

• Application of fertiliser to land is prohibited during the periods specified in Schedule 4 (Closed Periods).

• Closed periods do not apply in relation to the application to land of soiled water, or chemical fertilisers to meet the crop requirements of Autumn-planted cabbage or of crops grown under permanent cover, or fertilisers whose application rate or usage rate is less than 1kg per hectare of available nitrogen or phosphorus. "The amount of livestock manure applied in any year to land on a holding, together with that deposited to land by livestock, shall not exceed an amount containing 170 kg of nitrogen per hectare." "Where arable land is ploughed between 1 July and 30 November the necessary measures shall be taken to provide for emergence, within 6 weeks of ploughing, of green cover from a sown crop. A rough surface shall be maintained prior to a crop being sown in the case of lands ploughed between 1 December and 15 January." "Where grassland is ploughed between 1 July and 15 October the necessary measures shall be taken to provide for emergence by 1 November of green cover from a sown crop." Grassland shall not be ploughed between 16 October and 30 November. When a non-selective herbicide is applied to arable land or to grassland in the period between 1 July and 30 November the necessary measures shall be taken to provide for the emergence within 6 weeks of the application, of green cover from a sown crop or from natural regeneration. Where green cover is provided for in compliance with this Article, the cover shall not be removed by ploughing or by the use of a non-selective herbicide before 1 December unless a crop is sown within two weeks of its removal.

Buffer strips and Virtual Fencing

• A great many variations of 'buffer strip' measures have been described. Riparian buffer strips (P1, P4) can consist of grassy/herbaceous borders or treed zones along waterways or in floodplains. They may be fenced or unfenced, but either option needs to consider management. Some buffers are in-field systems (P2, P3) and when placed across drainage slopes provide effective mitigation. Width of the buffer strip is often determined by local conditions (soils and slopes) and the farmer's willingness to cede productive land. However, evidence suggests that much of the mitigation function of the strip occurs at the leading margin adjacent to the field, and strips as narrow as 1 m can be efficient in reducing sediment and nutrient losses to streams. Widths of 5 to 10m are common.

• Buffer strips intercept surface flows and facilitate infiltration and nutrient uptake or binding in soils. Perennial vegetation also stabilises banks. Removal is greatest for P which may eventually accumulate to saturation level and the strip may then become a source of P. However, P losses may occur in winter months, a time when impact is reduced and therefore water quality benefits still continue. Removal of P through harvesting of vegetation is possible but use of machinery in buffers can lead to compaction and rutting that may compromise function. Some evidence suggests that deep rooted perennials in established hedgerows may reduce nitrate levels in shallow groundwater. In well drained soils or where field drains are present sub-surface drainage may by-pass buffer strips.

• Where appropriate species are planted, buffer strips may have substantial biodiversity benefits.

• If livestock graze the area adjoining a waterway, some form of fencing is normally required to manage their access. Access can be managed by virtual fencing or by other options which do not involve fencing. The aim of virtual fencing is the welfare-friendly confinement of grazing livestock with boundaries identified by global positioning system (GPS) points.

Ponds/wetlands

• Existing or man-made natural ponds and wetlands (P8) occur at points of runoff convergence and may receive significant groundwater flows via redirected field drains or in low lying locations. They intercept diffuse nutrient loads to downstream waters through sedimentation and sorption, and denitrification. Effectiveness of nutrient retention/removal is very variable and dependent on hydraulic residence times, vegetation composition and density, and seasonal factors. In some circumstances they can become net sources of nutrients. Constructed wetlands (P9) function in a similar manner to natural ponds and wetlands. They may be of complex construction and include several basins, and often used

to treat small point wastewater sources being sited at 'end of pipe' locations. Multiple wetlands at strategic locations may be required to significantly reduce nutrient losses to waterways and may be of particular benefit in intensively farmed catchments.

Water management

- Measures to manage water movement through agricultural catchments aim at decreasing hydrological connectivity through increasing pathways and reducing flow rates. Many run-off attenuation features (P10) also reduce erosion and provide opportunities for infiltration, settlement and denitrification. Existing infrastructure in the form of extensive ditch systems in many agricultural catchments provide a unique opportunity for pathway interception measures (P11, P12). Minor modifications to ditch systems and informed management options can allow the potential of ditches for retention of sediments and nutrients to be expedited. The use of grassed waterways (P13) is not common but could be considered a particular case of ditch management where retention of ditch vegetation is recommended.
- Drainage of hollows in undulating landscapes (P16), particularly on clayey soils, to prevent preferential flow and erosion can reduce P losses in surface water flows.
- Abandonment or reduced drainage options (P12, P14, P15) raise water tables and can result in significant increases in denitrification and reductions in nitrate leaching. Such measures would not generally be acceptable to farmers but in high status, vulnerable or marginal lands they may be considered.
- Permeable reactive barriers for nitrate removal (P17) are quite experimental at field scale and require extensive expertise input in design and siting.
- Farm drainage plans (P18) offer an opportunity to integrate land use and soil/topographical features in effective management of nutrient resources and protection of receiving waters in catchments. Local knowledge and expertise can be captured in such plans but they would also benefit from advisory support to ensure that natural attenuation features are retained and exploited.

Mobilisation control measures

- Measures avoiding spreading at high risk times or places (M1, M2) are core provisions of GAP and are proven to be effective in reducing nutrient losses to waters. Seasonal closed periods are established in regulations but there is substantial uncertainty relating to forecasting weather conditions that are unsuitable for spreading. High risk places are addressed in GAP through stipulating set back distances for particular scenarios. However, there can be considerable subjectivity in identifying some hydrologically connected areas e.g. areas overlying some field drains, and advisory support might prove useful. In this regard farm drainage plans (P18) and soil management plans (S23) could play key supportive roles.
- Measures to incorporate or inject slurry into soils (M3, M4) ensure that loss of N through ammonia volatilisation and P through surface runoff are reduced. As much as half of plant available N can be lost through volatilisation in surface application of slurries while incorporation can reduce this by 50%. However the risk of nitrate leaching may increase. These application methods are also suitable for use in Minimal Tillage / Conservation Tillage cultivation systems (M11). Precision spreading (M5) minimises nutrient losses by avoiding hot spots of excess application that are prone to losses and facilitates maximum crop uptake. Specialist equipment requirements mean that these methods are only likely to be cost effective on larger farm enterprises.
- Changing from slurry to solid manures (M6) or the use of amendments to sequester nutrients (M7) are effective methods for reducing both N and P losses. Costs and practicalities of adopting such measures militate against their uptake.
- The use of green cover to minimise extent and duration of exposed bare soils (M8) significantly reduces incidental and leaching losses of nutrients. Plant cover must be established in time to allow nutrient uptake before the end of the growing season and thus removes soil nutrients through plant uptake that would otherwise be liable to loss. Cover also provides soil protection against erosion particularly in storm events which are a major cause of nutrient export to waterways.

• Early establishment of crops/vegetation cover after cultivation (M9) reduces soil nutrient reserves prone to leaching and protects soils. Nutrient application at times of peak plant growth in spring also ensures maximum uptake by crops. Choice of crops and rotations (M10) can affect soil structure and nutrient status and provide substantial mitigation.

Gateways/trackways management

• The management of gateways and trackways can prevent excessive poaching and soil damage. They are also hot spots for nutrient deposition in excreta, and erosion associated with compacted and bare soils, and preferential flow paths can cause severe localised impacts. Maintaining soil structure and porosity (P6), particularly along tramways, improves infiltration and reduces surface water flows. This measure primarily acts effectively against P losses. Improved aeration and infiltration could enhance nitrate leaching.

• A number of soil management measures relate to minimising soil disturbance and reducing compaction (M11, M14), both factors that dispose soils to erosion and reduce infiltration. Given the importance of sediment erosion in P losses, the reduction of P losses using these methods can be substantial. Mineralisation of nutrients is also reduced in minimum tillage systems resulting in reduced N leaching. Minimal tillage prevents formation of a plough pan and improves soil structure due to higher organic matter content in surface layers of soil. The lack of soil inversion and high organic matter may result in high P concentrations in surface soil prone to erosion, and may also to lead to N immobilisation.

• Other soil management or cultivation measures are concerned with limiting soil erosion, especially on sloping ground (M12, M13). Ploughing across slopes (when possible) can prevent rapid runoff in preferential flow and promote infiltration. Similar effects are produced by leaving seedbeds rough in autumn. These measures are more effective for reducing P losses but could result in slight increases in nitrate leaching.

• It is possible to add chemical amendments to soils to bind P and reduce losses (M14). However, in some circumstances erosion prevention measures may be required in addition to P-binding amendments.

• Livestock excreta and livestock impacts on soils can be a significant cause of nutrient mobilisation. Concentration of animals in focus areas around feeders or troughs, or along tracks results in locally high nutrient loads and significant damage to soils. Movement of feeders and provision of suitable bases around water troughs (M16) is an effective mitigation. The impacts on local water quality can be significant, and while reduction in nutrient losses may be modest, frequent replication of the problem can result in catchment wide impacts.

• Excluding livestock from waterways (M17) has also been included in S20, but in addition the measure prevents poaching of stream banks and the erosion of soil and nutrients that results.

Source control measures

• In general the fertiliser/slurry/manure measures aim to reduce nutrient application to land to the minimum amount required to meet agronomic needs (S1, S2, S5), or to below minimum requirements (S3, S4, S6) in the case of impacted catchment areas or high status areas with little capacity for adsorption of additional nutrient loads. To ensure that excess nutrient loads are not applied measures are included that maximise availability of applied nutrients through soil modifications (S7), timing of release to match crop ability to uptake (S8, S10), precision spreading or placement of fertilizers (S9, S15) or providing N through biological fixation by clover (S11). Nutrient management planning (S13) allows identification and integration of nutrient sources in a coherent approach that minimises source loads and seeks to ensure that individual nutrients are delivered in proportion to demand and existing availability (S14). Batch storage or composting of manures (S12) is primarily directed at reducing faecal pathogens loads and has a limited effect on nutrient losses. However, readily available N and total N content of stored manure can be lowered by 10-25% using this measure, and this lessens the risk of nitrate leaching loss.

• Many of the nutrient source control measures listed above have been addressed in the GAP regulations and are therefore legally binding. However, some of these measures could be adapted for high status or sensitive sites, or sites where intractable nutrient

problems may be encountered through voluntary or regulatory provision for selection and application in specified scenarios or locations. Application could entail attaching more stringent constraints to individual measures, such as extended time intervals for prohibited periods, or reduced application limits to address recovery timeframes, and might require incentivisation through compensatory payments e.g. as part of agri-environment schemes.

- The measures are broad spectrum in that they generally apply to all nutrient types and biophysical settings. Many of them have significant implications for GHG emissions and pathogen loads to waters
- Farm forestry is an increasingly important activity and appropriate planting of trees can offer both economic and environmental benefits. The landuse change involved results in reduced nutrient loadings, particularly if it substitutes for more intensive agriculture. Establishment of coppice woodlands in key locations also has potential to reduce nutrient and sediment loads through intercepting overland flows and enhanced infiltration. This is particularly suited to marginal lands.
- Livestock source control measures aim to reduce nutrient loads in animal excreta and to prevent poaching of soils which results in compaction and erosional loss of both sediments and nutrients. Most animal feed formulations contain excess nutrients in comparison to dietary requirements. Balanced feed formulations that reflect plant uptake requirements, or enhanced dietary efficiency (S17) are less likely to result in soil nutrient excesses and have been successful in reducing nutrient losses.
- Grazing pressure can also be reduced through decreased stocking rates or strategic movement of stock from vulnerable pastures and at high risk times (S18, S19, S21). While this is an effective measure, farm scale destocking is unlikely in the absence of incentives, and relocation depends on suitable alternative pastures being available. Extensification and traditional grazing systems are effective measures for high status sensitive sites and have significant biodiversity benefits. The possibility of animal housing for extended periods may require additional slurry storage facilities and increased labour. The exclusion of livestock from waterways (S20) prevents direct deposition of nutrients in water. The extent of animal access to streams and ditches, and the resulting pressure at catchment scales can be significant.
- Farmyard management is an effective measure to prevent pollution and is a requirement under GAP. These small point sources can have significant local impacts but can be readily resolved. Programmes of farm inspections are prioritised on a risk basis.
- While nutrient management planning is well established, preparation of specific soil management plans has potential to reduce erosion and nutrient loss by capturing local knowledge to identify problem areas for bespoke solutions. Farm advisory services should provide guidance on solutions.
- Behavioural change is fundamental to implementation of many of the measures cited. Farmers are often reluctant to undertake new measures even when financial incentives are provided. This may be due to lack of awareness of available solutions, lack of confidence in effectiveness of measure, lack of knowledge or expertise in measure design and implementation. Locally championed, peer-based knowledge transfer systems are preferred.

Receptor instream works

- Runoff attenuation features (R1, R2) help to restore natural flow dynamics of rivers and catchments. This re-naturalisation helps to reduce flood peaks and erosion events. It also provides opportunities for enhanced infiltration and sediment settlement which reduce nutrient export. The measures are primarily aimed at flood protection and there is little evidence as to their effectiveness in mitigation of nutrient impacts on waters.
- Natural/native riparian vegetation consists of species mixes of annual and perennial species. This ensures vegetation cover and stable banks in all seasons that are resistant to erosion. Invasive alien species can outcompete native species and displace natural plant communities. Control of alien species (R3), which can form extensive monospecific swards that die off in winter periods to expose soils of stream banks, allows native plant communities to re-establish.

Ammonia/Nutrient guidelines (Ulster Arable Society)

- Revision of environmental governance: advocacy first, enforcement and penalties second;
- Once-off, on farm nutrient recycling scheme: farmers with no phosphate land solution;
- Increasing net margin per ha through raising grass utilisation by 20% and quality by 7.5%: mining surplus P.
- Making rented land deliver better for environment and production: longer land leases, qualification for Agricultural Property Relief, securing Tapered Income Relief;
- Accelerating succession to educated farmers: 12% higher financial output and endorsement of UFU and YFCU on land mobilisation;
- Managing soils more effectively: correcting soil pH, applying nutrients to match soil and crop/grass need, using Ready Reckoner for slurry DM analysis and applying nutrient to maximise grass growth and minimise environmental impact (non splash plate techniques).
- Producing improved grass yield, quality and environment: regular soil analysis to check optimal fertility, prioritise increase in grass utilisation to high P soils (P mining), ensure regular reseeding where appropriate, apply enough sulphur;
- Prioritise and implement multifunctional technologies: clover (extend grass utilisation), woody riparian strips, woody biofiltration zones downhill of farm yards and septic tank discharges, woody biosecurity corridors, pasture agro-forestry.
- A number of measures affect nutrient behaviour or movement: implement stringent criteria in certain sensitive or high status sites if they are to be effective e.g. extended closed periods, greater set back distances, reduced fertilizer application rates. Specific tailoring of established measures or consideration/incentivisation of more stringent/restrictive measures.
- Effective implementation of mitigation measures relies very heavily on acceptability to farmers and confidence in outcomes. Supportive measures to engender behavioural change are included.

Results Based Measures & Local Initiatives (Irish EU funded Research Projects and Lessons Learned)

- Projects such as BurrenLIfe, MulkearLife, KerryLIfe and the Freshwater Pearl Mussel project are also developing agricultural best practice measures which support a results based approach – these approaches are likely to be very applicable to the Waters of Life Project.
- In addition the Practical Implementation of Freshwater Pearl Mussel Measures developed lessons learned regarding reprofiling forestry catchments and silt trapping, which coupled with ongoing research in ecohydrological requirements has identified needs to consider low flow requirements and the impact of measures on this.
- The OPW will also be advancing measures for natural flood risk management which will add to the framework of best practice measures.

Drinking Water Catchment Protection Measures (following UKWIR SCAMP approach)

- Deliver positive and sustained outcomes for the water environment by promoting a better understanding of the environment at a local level; and
- Encourage local collaboration and more transparent decision-making when both planning and delivering activities to improve the water environment.
- Environmentally focused planning and management process covering all catchments.
- Opportunity for local engagement for every waterbody, irrespective of whether or not catchment partnerships exist.
- Recognise formal catchment partnerships by the Environment Agency. Leads in partnerships will be agreed with stakeholders in the catchment according to their ability to tackle the issues in the catchment in a collaborative way.
- Catchment partnerships look at the water environment in terms of all the ecosystems services connected to a healthy catchment and aim for better integration of planning and activities to deliver multiple benefits (for example, supporting the delivery of objectives for Water Framework Directive, Biodiversity 2020 and flood risk management).

- Catchment partnerships inform the river basin district planning process and become integral to the way that Water Framework Directive objectives are delivered providing a degree of flexibility to respond to emerging local evidence.
- Other groups in and across catchments continue to operate, particularly at a more local community scale or around a specific issue. They seek any formal recognition of their activities in River Basin Management Plans through the catchment partnership (where they exist) or the local Environment Agency catchment contact (where no partnership exists).
- Source Protection Zones (SPZ): To protect from point-source and accidental pollutions. Raise awareness of citizens about the importance of protecting groundwater quality.
- Safeguard Zones (SgZ): Delimited around resources already affected by diffuse pollution. Control diffuse pollution.
- Water Protection Zones (WPZ): Control against diffuse pollution, when other means of protection have failed.
- Drinking Water Safety Plans, developed by water companies The plans, which are elaborated by water companies responsible for the supply of drinking water, contain measures dedicated to control diffuse pollution.
- Water Catchment Scheme or Catchment Action Plan, developed by water companies This programme of action's goal is to work at improving the quality of raw water through an integrated approach for managing water resources. This new approach for water companies was driven by the government who published in 2011 the strategic document "Water for Life", notably reflecting their strategy to address diffuse pollution. These plans are not dedicated to the protection of water abstraction plans; they deal with the protection of the resource as a whole.
- Project CSF: Catchment Sensitive Farming This project was led by Natural England, in partnership with DEFRA and the Environment Agency, in order to reduce diffuse pollution through training and advising for farmers, in areas classified as presenting a "high environmental risk ", in England.

Catchment Conservation Measures (following EN Remedies Approach)

- Better designed and targeted agri-environment schemes; Environmentally Sensitive Areas (ESA) Scheme; NI Countryside Management Scheme; Water Framework Directive; Reform of the CAP; Planning and other regulatory regimes (including Habitats Regulations Assessment)
- Climate change adaptation
- Compliance with Site management (notifiable operations); Education/awareness
- Control of alien/invasive species
- Control of diffuse pollution; Better designed and targeted agri-environment schemes; Environmentally Sensitive Areas (ESA) Scheme; NI Countryside Management Scheme; Nitrates Action Programme Regulations; Phosphorus Regulations; Water Framework Directive; Reform of the CAP
- Control of direct pollution - Water Order consents; Control of water abstraction; Planning and other regulatory regimes (including Habitats Regulations Assessment)
- Control of direct pollution; Control of water abstraction; Better designed and targeted agri-environment schemes; Planning and other regulatory regimes (including Habitats Regulations Assessment)
- Control of direct pollution; Urban Waste Water Treatment Regulations; Control of diffuse pollution; Better designed and targeted agri-environment schemes; Environmentally Sensitive Areas (ESA) Scheme; NI Countryside Management Scheme; Nitrates Action Programme Regulations; Phosphorus Regulations; Water Framework Directive; Reform of the CAP
- Control of waste crime; Restoration works
- Control of wood removal (education/awareness)
- Flood defence; Planning and other regulatory regimes (including Habitats Regulations Assessment)
- Increase of grassland management
- Increase of management in existing woods

- Monitoring and further study; Fencing to reduce pressure from stock, goats and deer; Better designed and targeted agri-environment schemes
- Planning and other regulatory regimes (including Habitats Regulations Assessment); Education/awareness

Wetland Management Restoration Measures

- Best practice in raised bog restoration in Ireland ISSN 1393 – 6670 includes the following best practice measures which have been developed and tested in an Irish context:
  - Drain blocking (including various forms of drain blocking on the high bog and margins)
  - Removal of forestry / tree and scrub clearance
  - Installation of marginal bunds
  - Inoculation with Sphagnum
  - Raised bog excavation/re-profiling
  - Bunding on high bog
  - Restoration for harvested sites
  - Monitoring
  - Restoration planning for raised bogs
  - Implementing a restoration plan

The above framework/suite of best practice measures (informed by lessons learned in an Irish context) would be further developed under the Waters of Life Project.

BEST PRACTICE / INNOVATION / DEMONSTRATION CHARACTER OF THE PROJECT

BEST PRACTICE & INNOVATION:

The *Water of Life* IP sets out to address the highly challenging task of addressing the long-term decline of high-status waters in the Irish River Basin District. The solution is complex and requires co-ordinated action across a number of diverse areas including ensuring local community buy-in and support for the project, appropriate policy responses in the relevant sectoral areas and through effective implementation on the ground. Through its governance / management arrangements, the project will ensure that all appropriate stakeholders are fully engaged in project delivery. Local communities and landowners will be fully involved and consulted at all stages of project implementation to ensure a strong sense of community ownership of the actions proposed. The project will also bring together all Government Departments and agencies with responsibility for relevant policy areas such as forestry, agriculture, flooding and nature conservation in order to promote greater understanding and awareness of the challenges relating to the protection of high-status waters, and to create enhanced coordination, solutions and policy responses to better support the longer-term goal of the Integrated Project. The *Waters of LIFE* Project also offers innovation in its approach to high status waters management via demonstrating previously untrialled measures on a demonstration catchment scale.

DEMONSTRATION:

The project will be implemented across six high-status river catchments comprising a mixture of land-use activities typical of such catchments. Each catchment will be approximately 120-130 km^2 in area. One of the six catchments will be selected on the basis that it has consistently demonstrated high-status conditions in the past and is currently '*Not At-Risk*' of failing to meet its WFD objectives in the future. This will serve as a control catchment and will be used to monitor the possible future effects of climate change on high-status waters over time. Monitoring arrangements will also be put in place to identify any future changes to land-use within the control catchment which could impact on water status at some future date. Five other catchments will serve as demonstration catchments for the implementation of catchment-wide protection or mitigation measures. Monitoring arrangements will be put in place to establish baseline conditions at the start of the project to evaluate the effectiveness of measures implemented. Catchments will be selected which allow both the implementation of measures which are necessary solely to ensure the 'protection' of high-status waters, and also the implementation of measures where 'restoration' may be required in parts of the catchment, or where a water body has been determined to be '*At Risk*' of not meeting its WFD objectives.

EFFORTS FOR REDUCING THE PROJECT'S "CARBON FOOTPRINT"

All efforts will be made to ensure that the "carbon footprint" of the Integrated Project remain as low as is reasonably possible. This will involve minimising greenhouse gas (GHG) emissions both directly from site and indirectly from energy use. For example, existing buildings and office spaces will be utilised to prevent the need for construction of new offices. Moreover, existing computers and electrical equipment will be used where possible to reduce the secondary footprint. Furthermore, a requirement for all equipment to be turned off when not in use will be implemented.

It is therefore anticipated that transport carries the biggest potential for enlarging the "carbon footprint" of this project. In order to minimise emissions from transport, team members will be selected and based in strategic locations (e.g. core team based in centrally in proximity to existing catchment management teams). In addition, videoconferencing will be used where

possible in order to minimise journeys to meetings. The surveying of site locations will be carried out remotely (e.g. using aerial imagery) where possible to further minimise journeys.

In order to measure and manage the “carbon footprint” of the Integrated Project, a GHG emissions inventory will be established. This will help identify major GHG emissions, and take actions to manage and reduce them over the project lifetime.

A component of carbon management is to reduce atmospheric GHG emissions through natural carbon sequestration. Therefore, the progression of the Integrated Project itself will contribute positively towards carbon management as it promotes natural carbon sequestration.

STAKEHOLDERS INVOLVED IN THE PROJECT

The Integrated Project will be led by the Department of Housing, Planning and Local Government which is has primary responsibility at a policy level for implementing the Water Framework Directive and the preparation and oversight of River Basin Management Plans. The Department of Agriculture, Food and Marine has policy responsibility in relation to agriculture and will provide essential input to the project in relation to rural development, forestry, agri-environmental matters, including farm-support payments and control. The National Parks and Wildlife Service of the Department of Culture, Heritage and the Gaeltacht manages the State's nature conservation responsibilities and is responsible for the designation and protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas. The Office of Public works is an Office of State at the Department of Public Expenditure and Reform with responsibility *inter alia* for flood risk management. The Environmental Protection Agency is the national agency responsible for protecting and improving the environment. It has specific responsibilities in relation to the Water Framework including advising the Minister on measures to be included in River Basin Management Plans. Local Authorities are responsible for the co-ordinated delivery of measures at regional and local level for River Basin Management Plan implementation. Teagasc is the national Agriculture and Food Development Authority and provides research, advisory and education services for the agriculture and food industry and rural communities. Coillte is a State owned company and is Ireland's largest commercial forestry company.

Local Development Partnerships, who administer Ireland's Social Inclusion programmes are also supporting the project actions.

A representative or representatives of community organisations will be included as a project stakeholder given the importance of working with local landowners and communities to the success of the project. However, at this stage it is yet premature to finalise the exact nature of Community representation on the project until the catchments have been selected.

In addition, at catchment level, the project will work with local communities and landowners to agree and oversee implementation of the catchment-specific programmes. The project will help set up a Local Committee in each of the pilot catchments and will work with these committees and with individual landowners to develop and agree the catchment-specific programmes to be implemented.

A Stakeholder Advisory Group will provide external input, guidance and feedback to the project. The Advisory Group will comprise representatives of local and national stakeholder interests, environmental NGO's, academics and others with particular expertise in areas of relevance to the project.

The Water Forum (An Foram Uisce) will be consulted and the views of the Forum will be sought on an ongoing basis in relation to the development and implementation of the project.

The following identified stakeholders have already been involved, by DHPLG, in developing the project concept: Department of Agriculture, Food and the Marine; National Parks and Wildlife Service of the Department of Culture, Heritage and the Gaeltacht; Office of Public Works; Environmental Protection Agency; Teagasc; Coillte; and Local Development Partnerships. Limited engagement with the National Water Forum (which includes agricultural representative organisations) was also undertaken during the project development and this engagement will be strengthened as the project develops.

Because catchment selection would not occur until Phase 1 of the Integrated Project (Action A.3), it is not yet possible to engage in meaningful direct consultation with landowners, although this will be a priority in the early stages (see Action A.5).

The farm organisations are represented on the National Water Forum and were involved in the earlier project engagement. Detailed discussions with all relevant farming organisations will take place during Phase 1 of the project, particularly under Action A.5.

EXPECTED CONSTRAINTS AND RISKS RELATED TO THE PROJECT IMPLEMENTATION AND MITIGATION STRATEGY

Difficulty in getting the support of local communities

For the project to succeed it needs to win the support of local communities and landowners who need to be convinced of the value of the work proposed and who must take ownership of the measures to be implemented. To overcome any possible problems in this area, the project will place very strong emphasis in engaging with local communities and landowners at all stages of project implementation. Project stakeholders have considerable experience in how to facilitate this process and the project will engage with local communities and landowners to gauge the level of participation that may be expected in shortlisted catchments before the selection of demonstration catchments. The project stakeholders also recognise the very important of the role of the Project Team Leader in addressing this risk. He/She will be the figurehead and public face of the project and will need to have strong communication, negotiating and influencing skills to establish the necessary working relationships needed to successfully implement the project. In addition the involvement of local development / LEADER companies and LAWPro representative already engaged at this level will help to mitigate this risk.

Delay in obtaining consents / authorisations

Implementation of some measures in demonstration catchments may require prior authorisation or consents, or formal consultation regarding the timing, management, organisation, and method of execution of works. This may relate to notifiable actions in Natura sites, afforestation or felling licences for forestry actions, derogations for land-use changes or fishery consents for in-stream works. The implementation of measures in some cases may need to take account of seasonal factors such as weather events, vegetation growth periods or breeding or migration periods. In some instances, it may be necessary to undertake screening for appropriate assessment. The *Waters of LIFE* project staff will collate a list of pre-commencement requirements and constraints for all measures and project operations. This work will commence early in the project during the preparation of the framework of measures, and discharge of pre-commencement requirements will continue during the selection of demonstration catchments to allow the necessary consents and permissions to be advanced in a timely manner for the selected catchments.

Climate change / flooding events

There is risk that localised flooding could cause severe damage to the in-stream ecology of one or more of the demonstration catchments during the period of operation of the Integrated Project. If such an event were to happen, it would render the water quality monitoring programme to determine the effectiveness of measure ineffective for the catchment(s) affected by the flooding event. To minimise this risk, the project will ensure that demonstration catchments are distributed widely across the geographical area of the Irish River Basin District.

Mobilising Other Funds

The project will mobilise complementary funding chiefly from existing budget commitments of the DHPLG, DAFM and Irish Water. It is considered to be a strength of the Integrated Project proposal that these other funding streams are as guaranteed as can be in a national budgetary sense, thereby minimising risk.

The DHPLG, as Contracting Authority will liaise with other governmental parties to ensure that these planned budgets are in place at the outset of the project in which case the contingency allowance will be released towards the project implementation. If a shortfall does

arise the DHPLG will consider other funding opportunities for example agri-environmental funding and stakeholder support in order to maximise the available funds and ensure the contingency is expended on core project delivery.

CONTINUATION / VALORISATION AND LONG TERM SUSTAINIBILITY AFTER THE END OF THE PROJECT

- How will you ensure the long term implementation of the plan and beyond?

The long-term implementation of measures under the River Basin Management Plan to protect high-status waters is guaranteed since the obligation arises under the Water Framework Directive.

The co-ordinating beneficiary commits to ensuring that farmers engaged in the RBAP scheme will continue to be supported after the project has been completed. It is envisaged that the project will take a similar path to the successful Burren LIFE project, which subsequently evolved into the Burren Programme. This programme is currently being implemented. With regard to the "Waters of Life" Integrated Project proposal the aim will be to extend the commitment to support farmers engaged in the Results Based Payment (RBAP) scheme for a period of five years beyond the lifespan of the LIFE Integrated Project.

The Key Performance Indicators table in this proposal, describes the roll out by the co-ordinating beneficiary and relevant stakeholders of two replications of the project, with 6 catchments in each where measures are applied. This will potentially result in the extension of the RBAP scheme into 12 further high status catchments.

Continued rollout will be financially supported both at national and local level by the mainstreaming of funding requirements into the implementation of successive River Basin Management Plans, which may eventually include the continued availability of a RBAP scheme for high-status catchments nationally.

As part of this LIFE IP proposal it is estimated that the five catchments included in the project would encompass approximately 36,000ha of pasture land, representing approximately 1,028 farmers. From the experience of previous similar projects it is assumed that the uptake of any RBAP scheme would be less than 100%. For the purpose of this LIFE IP application it has been assumed that the uptake would be in the region of 70%, equating to 720 farmers. While the payments to be made per hectare are not fully known at this stage, compared to similar schemes it is estimated that the payment under the RBAP scheme will be in the region of €2,900/farmer/yr. Therefore, allowing for the number of farmers, the period over which the actions will occur within the LIFE IP catchments, and the likely uptake, it is estimated that €9.5M would be a reasonable approximation of the total cost of the scheme over the lifetime of the project.

After the LIFE Integrated Project it is assumed that a further two replications will be rolled out, with 6 catchments in each where measures are applied. This equates to a factor of 2.4. Assuming that the initial catchment continues to run and a further 2 replications with 6 catchments are developed, then the overall cost for an additional 5 year run would be €9.5M (for original catchment) + €9.5M x 2.4 (for the two replications) = €32.3M.

In terms of sustainability advice, farmers will continue to be supported in the After-LIFE phase, as part of the embedded farm advice system operated by the Agricultural Sustainable Support and Advisory Programme and/or Teagasc.

It should be noted that the details of the above commitments beyond the lifetime of the LIFE Integrated Project will ultimately be subject to the recommendations of the national Water Policy Advisory Committee (WPAC) and the agreement of the relevant funding government departments represented on the WPAC. Such recommendations and agreement will be based on a review of the performance of the LIFE Integrated Project in achieving its

objectives. The likely sources of funding for the extended commitment are expected to be principally from the Department of Agriculture, Food and the Marine, which has responsibility for agricultural policy and the Department of Housing, Planning and Local Government, which has responsibility for water policy. Opportunity to integrate the RBAP scheme within future national Rural Development Programmes will be examined.

- Which actions will have to be carried out or continued after the end of the project?

The project beneficiaries plan to complete all concrete implementation actions during the lifetime of the Integrated Project. However, it is envisaged that water quality monitoring of the demonstration catchments will be maintained after the project is completed to confirm the long-term maintenance of the water quality improvements achieved. More generally, the learnings and outputs from the project will be assimilated into the wider working arrangements for River Basin Management Plan implementation and will inform the approach to be adopted across all high-status waters in the Irish River Basin District.

- How will this be achieved? What resources will be necessary to carry out these actions and how will those capacities be ensured?

Ireland has committed substantial resources which will operate alongside and complementary to the Integrated Project undertaking actions similar to those proposed under the LIFE funding. These include the 35 specialist technical staff working as part of the Local Authorities Water Programme, twelve Community Water Officers and 30 Agricultural Sustainability Advisers. In addition, the Department of Agriculture, Food and Marine is providing funding for a number of water-related European Innovative Partnership (EIP) projects under the Rural Development Programme which will be undertaken over the next 4-5 years as complementary actions to encourage locally-driven solutions to address water and biodiversity challenges at a local or regional level. It is expected that this level of resource will be maintained and possibly even increased in future River Basin Management Plans. Strong links established between the project and the structures in place to oversee implementation of the River Basin Management Plan will ensure that the work and outputs of the Integrated Project will ultimately be mainstreamed and integrated into this wider working arrangement for the protection of all high-status waters across the Irish River Basin District. The project will prepare an 'After LIFE Plan' and policy action (Tasks F.5 & F.6) which will set out how this work will be integrated into the wider work of River Basin Management Plan implementation.

- Will the staff recruited/trained during the project continue to work on the implementation of the plan?

It is envisaged that staff recruited and trained for the Integrated Project will be given the opportunity to become part of the wider RBMP implementing resource should they so wish.

- How, where and by whom will the equipment acquired be used after the end of the project? (if relevant)

Not relevant.

- To what extent will the results and lessons of the project be actively disseminated after the end of the project to those persons and/or organisations that could best make use of them (please identify these persons/organisations)?

It is intended that this project (the *Waters of LIFE* IP) will be integrated into Ireland's catchment management system throughout the project's duration and therefore be fully integrated, forming the new normal way of managing high status waters, after the project's completion.

The beneficiaries involved each play an important part in this system and will help to steer the project so that it delivers the outputs that they need to widen the project's findings to other high status waters. The most closely linked beneficiary is the Local Authorities Water Programme system and its *Blue Dot Catchments Programme* would are likely to gain direct benefit from all results and findings and to adopt responsibility for the demonstration catchments, databases etc post project.

This project is, in particular, supportive of Ireland's *Blue Dot Catchments Programme* being implemented by Local Authorities Water Programme, however it will operate in distinct catchments and trial measures whilst the wider Local Authorities Water Programme activities initially focus on community engagement and catchment investigations. Under the *Blue Dot Catchments Programme* a co-ordinator role has been identified to observe and engage with this project so that it results and lessons are actively disseminated as they arise and beyond the project's duration. This is in order that the *Waters of LIFE* project systems developed can be implemented into wider catchments as soon as possible via the *Blue Dot Catchments Programme*.

The results based agricultural payment system and other measures will be offered to the beneficiaries to encompass within new schemes, the associated training to advisors and landowners will build capacity to maintain the *Waters of LIFE* IP project's approaches.

The inclusion of the Walsh Fellowship research element by Teagasc is a significant collaboration and will provide a further link to the future of Irish agricultural planning and shape agri-environmental schemes. Similarly involvement by Coillte demonstrates long term commitment of the forestry sector.

The research/project links to the wider network of Life and other relevant research projects will also support dissemination as will the end of project conference and the schools programmes. This is further supported by the 'After LIFE Plan' and policy action (Tasks F.5 & F.6). It is envisaged also that such engagement activities would be adopted by the Local Authorities Water Programme system and fully integrated into the *Blue Dot Catchments Programme*.

In addition there is support from the locally based rural stakeholders such as the Duhallow IRD, South Kerry Development Partnership (SKDP) and Kilkenny LEADER Partnership (KLP) and seven similar groups have formed a team who would bring soft and hard skills to the community engagement and measures implementation aspects and would likely play a role post project supporting wider high status catchment roll out and embracing additional development and LEADER companies.

LIFE Integrated Projects 2018

Stage 2 – Full proposal

TECHNICAL APPLICATION FORMS

Part C – detailed technical description of the proposed actions

Important notes:

- **All calculations and detailed cost breakdowns necessary to justify the cost of each action should be included in the financial forms F. In order to avoid repeating the financial information (with the risk of introducing incoherencies), Part C should only contain financial information not contained in the financial forms (e.g. details explaining how the cost of an action has been estimated).**
- **All forms in this section may be duplicated, so as to include all essential information.**
- **Each action described should have a clear indication of its physical target (e.g., action 1 will take place in area "X" and/or will target species "Y"). Whenever this is relevant, the location of these actions should also be identified on one or several maps which must be provided in annex .**
- **Any action that is sub-contracted should be just as clearly described as an action that will be directly carried out by the beneficiaries.**

LIFE Integrated Projects 2018 - C1

DETAILS OF PROPOSED ACTIONS

A. <u>Preparatory actions (</u>elaboration of management/action plans, obtaining licences and permits, trainings, etc.)

For each action or set of actions specify the following:

<u>ACTION A.1</u>: name of the action

A.1: Prepare detailed characterisation of HS Catchments (ecology, natural capital value, main pressures, problems)

Beneficiary responsible for implementation:

DHPLG, EPA, Local Authorities, Coillte, DAFM FS

Description (what, how, where and when):

High Status (HS) surface water sites reflect largely undisturbed catchment conditions and status that is close to natural or pristine, or with only minor anthropogenic disturbance. They indicate the reference status that catchment management should strive to target. They may also be centres of high biodiversity, or may contain rare and threatened habitats some of which are essential to survival of species with very particular ecological requirements (e.g. oligotrophic and dystrophic lakes, slender naiad and freshwater pearl mussel). The presence of HS sites can contribute significantly to species diversity and these sites act as refuges for species that are a source for re-colonisation of river stretches that are recovering from pollution. HS sites and their catchments are also important providers of ecosystem goods and services and are areas of high natural capital value.

Unfortunately many sites previously classified at HS have lost their high status over recent decades. In its most recent Water Quality Indicators Report Ireland's EPA reported a decline in the number of high quality sites (i.e. sites with biotic Q values of Q5 or Q4-5 which are equivalent to HS sites) from over 31% of sites monitored in the 1980s to just 17% in 2017, and only 30 of these remaining HS sites are considered pristine. The EPA conclude that the ongoing loss of our most pristine rivers is a very significant concern. A large effort is required to protect the few remaining high status river sites and, where possible, return impacted ones to high status.

High status is defined by a limited number of metrics. In particular the site's macroinvertebrate community structure is used to derive a biotic Q index which should be at Q5 or at Q4-5 for high ecological status classification to be assigned. Physico-chemical and hydromorphological status must also be high to achieve High Status overall. Such metrics integrate a large number of environmental inputs and when status deteriorates it may be difficult to determine the particular environmental driver, or combination of drivers responsible. It is therefore vital to understand HS catchments and the physical and environmental factors critical to maintenance of high status.

The Waters of Life project will undertake a review of current and recent HS sites to describe the main features of such sites and their catchments. Landscape features including catchment vegetation, and land use type and intensity, topographic and hydromorphological characteristics of sites will be reviewed and any changes in such features that may have been associated with loss or restoration of HS will be identified. The specific parameter(s) responsible for the change in status classification of a water body will be identified whether biotic, physicochemical or hydromorphological to inform the interpretation of catchment features driving status. Use of time-series satellite and Corine data, LIPIS and FIPS inventories and history of recorded status will inform the review process. Such a review will also seek to identify threshold levels at which a change in status may be precipitated, including within class status shifts, and appropriate metrics for their detection.

The landscape characteristics and hydrological profiles identified as typical of HS catchments will be identified and mapped by the Waters of Life project using GIS and used to provide a dataset of currently unclassified sites that could potentially be at HS. Given the documented trend in losses of known HS sites, and the very few remaining pristine sites, it is important that the true extent of the HS catchment resource is identified so that all these vulnerable sites can be prioritised for protection. The Waters of Life project will provide an important platform and support for the work undertaken under the *Blue Dot Catchments Programme*, and the further elaboration of measures to be included in future River Basin Management Plans. Verification of HS in these potential sites will also assist in validating and refining our understanding of what ecosystem factors are critical to high status in surface water catchments.

This national review of HS sites by the Waters of Life project will document the range of physical and environmental factors encountered. It will help to identify HS sites that are at greatest risk based on cumulative catchment pressures and sites where interventions are most likely to be effective. As such this action will provide a basis for the process of selection of demonstration catchments in which measures will be trialled by the Waters of Life project. It will also improve understanding of key natural capital assets of these areas based on a number of parameters: extent, condition, service supply and use of ecosystem goods and services within the catchments. This will inform indicative baseline valuations of natural assets.

A total of six high status catchments of around 120 km^2 will be selected, one of which will act as control, based on the proposed catchment characterisation and selection process outlined below.

A four-stage process is initially proposed to select high status catchments for the project.

1. Catchment characterisation

The first stage will capitalise on work done at sub-catchment level for the characterisation process of the Water Framework Directive and further updates currently ongoing for the third WFD Cycle. This process is data rich and used over 140 layers - including geology, soil type, soil moisture, topography, land cover, land use, animal numbers, fertiliser use etc. In addition, advanced models were developed to combine layers to quantify the probable sources of nutrient contribution including from agriculture and domestic wastewater. Additional approaches will be used to focus on characterisation of high-status sites such as land cover change – recently shown to be of significance for these sensitive systems. Data are available for a total of 583 sub-catchments.

2. Deriving a combined spatial/temporal probability of high or reference status sites

Ireland has an extensive monitoring network of over 3,000 sites monitored for river macroinvertebrates, some of which date back to the 1970s. This data will be used to derive ecological status, including information on proximity to boundaries of high and good together with trend analysis to quantify likelihood of change and exact position along the ecological gradient. This information can be combined into an overall probability of change. This will help to identify high status sites that are at greatest risk based on cumulative catchment pressures and sites where interventions are most likely to be effective. As such this action will provide a basis for the process of selection of demonstration catchments in which measures will be trialled by the Waters of Life project. Key scales at which to examine that variation around high status are:

a. site (temporal variation around high status)
b. sub-catchment level distribution (spatial distribution, variation and concordance of high status sites)

3. Models combining information of 1 and 2 above

Geospatial interpolation of these sites in the context of the catchment characterisation can be used to predict/detect other unmonitored high-status sites as well as verifying the relationship between catchment characteristics and current status. A non-parametric multiplicative modelling approach can be suitable to achieve this (Yost, 2008). This will also help define the pressure gradient affecting change in high status sites – along which the demonstration catchments can be placed (including that of the control).

4. Validation of selection

This will involve the use of earth-observation from the Copernicus programme to examine the catchments. Recent research has tried to link peatland health to water retention during drought periods and the drought in 2018 will serve as an excellent reference point for this purpose (Lees et al., 2018). In addition, field visits will be carried out for confirmation and further characterisation prior to selection.

This task will be undertaken through external technical support procured at the project's outset. It will be completed within a period of 6 months.

Reasons why this action is necessary:

A clear understanding of the interrelationship of landscape and high status surface waters is critical to directing effective management interventions and selection of appropriate measures. It will also inform the identification of appropriate metrics for early detection of system response to measures applied. This action will also be an important prelude to informing the process of identifying potential pilot sites for trialling measures by the Waters of Life project.

Constraints and assumptions:

Delivery of this task is dependent on completion of Project Management task F.1, establishment of a project management structure and recruitment of core project team. The recruitment of external support will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases.

Expected results (quantitative information when possible):

The task will provide a detailed analysis of landscape features in known high status sites, or sites recently at high status, comprising about 5% by area of the Irish River Basin District and relate changes in them to recorded changes in site status.

The analysis will identify metrics that can be used to detect system changes relevant to status shift for monitoring effectiveness of measures implemented to protect and restore HS.

Landscape profiles information determined on typical high status attributes will be applied by the Waters of Life project to identify other potential high status sites not currently in the River Basin Management Plan monitoring programme.

The catchment assessment process that was developed by the Environmental Protection Agency in preparation for the River Basin Management Plan is constantly being updated and refined as new data and monitoring/mapping techniques becomes available. It is anticipated that for this project, the initial catchment characterisation will focus at a national scale on those catchments with a number of waterbodies with a high status objective under the WFD.

This will be further refined taking account of the risk of those waterbodies not meeting their objective, land use patterns, and a number of other criteria, which will be confirmed during Action A.1. In this regard, all 4,829 of Ireland's waterbodies will be in the initial assessment; and using the catchment characterisation and selection process proposed in Action A.1, a total of six high status catchments of around 120 km2 will be selected, one of which will act as control.

The task will inform the selection of demonstration catchments.

Deliverables:
An initial analysis of classification metrics that have driven High Status Site changes in recent years. This will include sites that have lost HS, those that have improved to HS and sites where status has fluctuated between HS and lower classifications.

An analysis of landscape features, land use intensity, and hydrology that typifies known HS sites. Identification of significant changes in landscape / land use over the period of analysis.

Comparison of HS changes and landscape feature changes to identify potential drivers of HS. This will include identification of unmonitored potentially HS sites.

Milestones:

- Procurement of external technical support. This should occur within 3 months of completion of task F.1.
- High Status Sites Characterisation Report delivered by 1/12/2020
- Landscapes of HS Sites Report and Unmonitored Sites Potentially at HS Report delivered by 1/12/2020
- Metrics for use in Determining Status Change Report delivered by 1/12/2020.

ACTION A.2: name of the action

A.2: Prepare Framework of HS Measures (Best Practice Measures) and guidance

Beneficiary responsible for implementation:

DHPLG, EPA, DAFM, Local Authorities, Teagasc, Coillte, DAFM FS

Description (what, how, where and when):

A critical initial element of the Waters of Life project is to review published research and project outputs to identify best practice measures that are most relevant in the context of High Status (HS) sites; suitable for implementation under the prevailing conditions; capable of achieving the degree of mitigation required to secure high status; economically and practically feasible; and socially acceptable. Identifying this framework of robust and appropriate measures is essential to effecting restoration and protection of HS sites. Liaison and networking with other projects (action E.4) will support this process.

This task requires Best Practice Measures (BPMs) relevant to HS sites to be objectively identified, rigorously assessed and collated through review of the relevant research literature and project outputs. Measures include all interventions intended to manage aspects of the local environment or landscape that may affect water status. They are taken to include physical infrastructure, alteration to management, operational or behavioural practices, manipulation of habitat or vegetation structure, land use change and climate change mitigation measures. The Waters of Life project will give priority to research and projects carried out in an Irish context or in similar climatic, topographic, land use and socio-economic settings where similar pressures apply. Innovative measures such as the use of virtual fencing will be considered for inclusion in the framework of measures.

Numerous research and field projects have investigated methods of mitigating impacts from a variety of pressures on surface water ecosystems, often with a sectoral focus. Such research has been undertaken in a variety of contexts, many differing significantly from the situations encountered in high status catchments with respect to soils, drainage, topography, land use, hydromorphology and socio-economic status. Some measures have been trialled for short periods, in limited seasonal or climatic conditions, or at very small spatial scales. Their suitability and potential effectiveness for deployment in Irish HS site scenarios and scalability potential for regional or national roll out will be critically assessed by the Waters of Life project.

In Ireland the EPA have identified that forestry, hydromorphological and agricultural pressures are the most common pressures in HS catchments. While there may be many other pressures operating (e.g. peat cutting, domestic and urban wastewater, quarrying and industry) the majority of HS water bodies were found to have one significant pressure. Impacts may arise mainly due to changes to catchment hydromorphology, and increased sediment and nutrient inputs. Some previous and current projects and research that will inform the potential framework of measures include Kerry LIFE, LIFE-IP PAF-Wild Atlantic Nature, Pearl Mussel Project EIP, DAFM Forests and Water, the Harmony Project, Teagasc Agricultural Catchments Programme, Interreg Freshwater Pearl Mussel Measures project, Strive Research on High Status Water Bodies, EPA AgImpact project (see project links below). The selection of measures by the Waters of Life project will consider the sensitivity of high status catchments and ecosystems to even minor alterations in pressures. Measures must therefore be capable of effecting changes at low pollutant and pressure levels, and be suitable for installation, maintenance and operation in the catchments in question (many of which are remote and difficult to access).

Technical and operational expertise, and a clear understanding of the source-mobilisation-pathway-receptor paradigm of pressure mitigation is required for a realistic, objective and critical appraisal of potential measures. The Waters of Life project will consult with key agency staff to inform the assessment of measures.

Through this action the Waters of Life project will deliver a framework document that provides guidance in relation to details of individual measures including measure design elements where necessary, and methods for implementation, details of optimal locations and timing of installation, and HS catchment/pressure scenarios indicating measure selection. Likely response times to achieve specified targets will be provided, and synergies and complementary roles with other programmes or additional environmental benefits (such as biodiversity promotion or climate change impact mitigation). Constraints on measure selection or implementation will be outlined including socio-economic acceptability, potential for adverse impacts on other parameters, habitats or species, gains or losses of natural assets, or scalability issues.

An estimate of unit costs associated with measure installation, operation, and maintenance will be provided for individual measures. Such costings will consider the projected lifespan of measures and the likely timeframe required for measure deployment in achieving objectives.

Measures cited will be additional to RBMP basic statutory measures either in their nature or method of operation, or in the extent and/or rigour of implementation. The additionality of the measures selected will be clearly set out in the document.

The framework of measures document will include a full bibliography of research papers and project outputs reviewed by the Waters of Life project.

External technical support will be procured at the project outset to deliver this task within six months of appointment.

Reasons why this action is necessary:

It is essential that a framework of appropriate potential measures relevant to HS sites are identified at the outset of the Waters of Life project. All relevant measures that may have application in HS sites will be listed through the review process. Although not all will be trialled in demonstration catchment applications in this project, the framework will be available for roll out to support RBMP objectives, and the wider Blue Dot Programme in particular, for the full range of national HS sites and the diversity of issues and scenarios to be addressed.

Constraints and assumptions:

Achievement of this task is dependent on completion of project management task F.1, establishment of a project management structure and recruitment of core project team. The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply.

Expected results (quantitative information when possible):

The task will provide a review of research and project outputs relating to high status waters to produce a comprehensive framework of measures for protecting and restoring HS sites. The framework will constitute a major resource for achieving RBMP objectives to protect and restore HS surface waters nationally. It will also inform the development of the Results Based Agriculture Payment Scheme under action A.4, and the guidance will assist in training advisors required to support scheme implementation.

At this point in time there are many environmental measures that have been trialled in various research and field projects, primarily aimed at mitigating the issues through the use of the source-pathway-receptor model. Action A.2 will gather together as much information as possible on the measures that have been tested, assess their applicability to the project catchments, and undertake a cost/benefit analysis of their implementation. The end result is expected to be a suite of measures (some of which may also develop with the project) that will be available to farmers and landowners. Realistically, this could be in the range of between 10 and 30 measures of various scale and complexity, ranging from infrastructural improvements to farm practice/behavioural changes.

Deliverables:

The task will deliver a framework of available measures for protection and restoration of high status catchments along with guidance on design and implementation; environmental parameters targeted and expected trajectories post implementation; estimated costs; synergies with other programmes of measures; cumulative or secondary effects. Through a SWOT analysis of shortlisted measures the Waters of Life project will include an assessment of constraints to implementation, likely acceptability of measure, and established effectiveness.

Milestones:

- Appointment of external technical support. This should occur within 3 months of completion of project management task F.1.
- Comprehensive list of measures for consideration in HS scenarios within 1 month of appointment of technical support.
- Draft Framework of HS Measures document for review within 4 months of appointment of technical support.
- Final Framework of HS Measures delivered by 1/03/2021.

http://kerrylife.ie/
http://www.pearlmusselproject.ie/
https://www.agriculture.gov.ie/media/migration/forestry/grantandpremiumschemes/2018/ForestsWaterFINAL26June18LoRes280618.pdf
https://www.teagasc.ie/environment/water-quality/harmony/
https://www.teagasc.ie/environment/water-quality/agricultural-catchments/
http://www.donegalcoco.ie/services/environment/fresh%20water%20pearl%20mussel/
http://www.epa.ie/pubs/reports/research/water/strivereport99.html
http://www.epa.ie/researchandeducation/research/researchpublications/researchreports/research194.html

ACTION A.3: name of the action

A.3: Select Demonstration Catchments

Beneficiary responsible for implementation:

DHPLG, EPA, DAFM, Local Authorities, Coillte, DAFM FS

Description (what, how, where and when):

For RBMP purposes surface waters have been divided into Water Bodies of which there are 4829 nationally. These Water Bodies have been agglomerated into Sub-Catchments (583 nationally) and further combined into the final management tier of Catchments (46 nationally). Water bodies vary significantly in area but are of the order of 20km^2 on average. Sub-catchments on the other hand are 5 or 6 times that area, generally 100 - 150km^2 approximately. The sub-catchment scale is most suitable for selection of areas in which to carry out the demonstration project and is the scale preferred by Waters of Life project beneficiaries. Such areas encompass a sufficient variety of land uses, vegetation types and topographic scenarios to facilitate meaningful 'catchment-scale' trials in multi-pressure systems.

The Waters of Life project will select a number of sub-catchments containing HS Objective waterbodies. Catchments included in other ongoing projects or programmes, including the eight priority FPM catchments and Priority Areas for Actions, will be excluded from the selection process.

One catchment will be selected on the basis that it has consistently demonstrated HS conditions in the past and is currently 'Not at Risk' of failing to meet its WFD objectives in the future. This will serve as a control catchment and will be used to monitor the possible future effects of climate change on HS waters over time. Monitoring arrangements will be put in place to identify any future changes in land use within the control catchment which could impact on water status. Consideration of regionalised climate change pressures will also be developed into the monitoring across the demonstration catchments.

Five other areas will be selected by the Waters of Life project as demonstration catchments for implementation of catchment-wide and multi-sectoral protection or mitigation measures. The selection process will adopt a Multi-Criteria Analysis approach that amongst other criteria will consider number and extent of significant pressures, status history, Q value, RBMP objectives, forest estate management schedules, Natura designations, hydrogeology, soils, land use, landownership, geographic spread, current participation levels in agri-environment schemes, housing numbers, planned or pending development, availability of key data sets and previous monitoring.

The Waters of Life team will undertake catchment visits as shortlisting progresses to ground truth selection criteria and to engage with communities and landowners to gauge the level of participation that may be expected in shortlisted catchments. The Waters of Life team will undertake preliminary catchment reconnaissance to confirm catchment suitability and to make an initial assessment of potential measures and sites for their implementation.

The process of catchment selection will be undertaken by the Waters of Life core project team with external technical support and in consultation with DAFM, EPA, Coillte and Teagasc, and any other project beneficiaries as necessary. Selection of demonstration catchments will use a multi-criteria analysis and can commence during the completion phase of action A.1 and will be completed within 15 months.

Reasons why this action is necessary:

It is essential that pilot demonstration catchments are chosen that are representative of the spectrum of HS sites and the issues prevailing in them in order that findings and outputs from the Waters of Life project are relevant to, and can be rolled out to the wider population of HS sites nationally.

Constraints and assumptions:

Community participation is vital to the success of pilot demonstration of measures. Catchment selection must ensure that local landowners and residents are favourably disposed to the project and are likely to participate at meaningful levels. Action A.5 will be undertaken during demonstration catchment selections and aims to promote the Waters of Life project and elicit support among communities in potential demonstration catchments. The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply.

Expected results (quantitative information when possible):

The Multi-Criteria Analysis selection process will identify a number of catchments representative of the spectrum of HS sites that are suitable for use as demonstration catchments and where a high level of community and landowner participation is likely. Six catchments (one control and five demonstration catchments) will be selected for implementation of the project.

Deliverables:

A Demonstration Catchment Selection Report listing those catchments selected with a range of pressures suitable for measures demonstration will be delivered. This report will set out the Multi-Criteria Analysis used in the selection process for all catchments considered including those eventually shortlisted.

Early engagement with local communities during the process will direct the project to catchments and areas within catchments that will maximise the opportunity for local participation and for successful project outcomes. Details of the engagement process and groups / community members engaged will be set out in the report above.

Milestones:

- A Demonstration catchment Selection Report detailing the selection process and key considerations in final selected catchments. Lessons learnt in effective methods to approach and engage with local communities will be documented. This will be delivered within 15 months of completing action A.1.
- Demonstration catchments selected by 1/03/2022

ACTION A.4: name of the action

A.4: Develop HS catchments RBAP scheme

Beneficiary responsible for implementation:

DHPLG, DAFM, Teagasc, Local Authorities

Description (what, how, where and when):

Catchment characterisation by the EPA has identified forestry, hydromorphological and agricultural pressures to be the most common pressures in high status catchments nationwide.

Research has shown that even in low intensity farming systems relatively small scale pressures can have greater impact in HS catchments due to topography, marginal and peaty soils and the greater sensitivity of these areas. It is therefore necessary to address the central issue of agricultural pressures in HS catchments.

Agri-environment schemes are the primary mechanisms through which farmers are financially rewarded for farming in an environmentally friendly manner beyond what is required by the basic statutory measures. Successive schemes over the years have included REPS, AEOS and the current GLAS scheme. Result-based agri-environment payment schemes (RBAPS) differ from conventional agri-environment schemes in that they award payments to farmers on the basis of the quality of the desired environmental outcome that is delivered rather than payments for compliance with prescribed conditions. RBAPS payments can also be combined with payments for non-productive investments and prescriptive mandatory measures, for example where catchment-wide issues extending beyond individual farms must be addressed.

A variety of RBAPS models and schemes where payments are linked to performance in reaching environmental goals have been previously implemented in Ireland: Burren LIFE (http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=2661), Kerry LIFE (http://www.kerrylife.ie/), Pearl Mussel Project EIP (http://www.pearlmusselproject.ie/). These models will form the basis for the Waters of Life project to adapt a practical scheme relevant to measures for protection and restoration of HS sites (HS RBAPS).

The result-based scheme will be developed in accordance with guidance developed by the RBAPS Project (https://rbaps.eu/documents/guidance-documents/). It will be delivered by the Waters of Life core project team in consultation with the relevant project beneficiaries and with specialist external technical support to ensure that the necessary specialist and scientific expertise is available to develop the RBAPS scorecard, design monitoring and evaluation, and provide guidelines. It will be designed in consultation with farmers and farming representatives to promote farming practices that deliver truly sustainable land use in HS catchments, build local trust and capacity, and enable co-creation and innovation. The Waters of Life project will be careful to ensure that all scheme outcomes delivered are additional to statutory obligations and will not result in dual payment under any existing schemes.

The Waters of Life project will ensure that RBAPS targets and results assessment scores will incentivise actions that promote ecosystem integrity and remove threats to future HS prospects. This includes targeting systems that replicate natural hydrological and ecological systems with little disturbance. Examples of areas of action for inclusion in RBAPS are vegetation structure and areas of bare soil that reflect grazing pressures; drainage intensity and depth which impacts on site hydrology and groundwater flows; species rich grassland and floodplain meadows that reflect natural site hydrology with reduced nutrient inputs; active raised bog areas that retain water and reduce flood peaks; native woodland that creates buffers and reduces sediment losses in surface flows; bank erosion and poaching due to livestock access. The Waters of Life project will set targets for specific parameters using

existing data on key pressures and known responses to agricultural practices, and informed by the deliverables in action A.1. A framework of measures that may be applied in achieving the RBAPS targets will be developed under action A.2.

A scoring system will be devised for the HS RBAPS that is robust and simple to manage and can be readily understood by farmers. The scoring scheme will incentivise performance and payments will be proportional to quality of outputs delivered. Objective criteria for assessing performance will be developed and agreed with farmers and farming representatives. The Waters of Life project will produce relevant guidance material to support implementation of the RBAP scheme. This material will be non-technical and easily followed by participants. Extensive use of imagery will allow for a clear understanding of RBAP scheme objectives.

Participation in the RBAPS will be voluntary and therefore it must be socio-economically acceptable and financially beneficial for participants in comparison with alternative potential land use options. The Waters of Life project will develop a payments structure that reflects this and that is linked to results and based on objective assessment criteria. Payment levels will reflect the quality of outcomes delivered, additional costs and opportunity cost. Provision for initial investment and multi-annual implementation of measures will be considered. The payment scheme will incentivise participation of farmers in core target areas and will consider impacts of factors outside farmers' control that may affect achievement of targets.

The RBAPS is a vector for implementing appropriate agri-measures identified by the Waters of Life project in action A.2 to achieve specified targets. RBAPS is essentially a scheme to release payments to farmers based on the results delivered and confirmed by an agreed scoring system. The mechanism of achieving those results will be decided by participating farmers, thus capitalising on farmers' experience and intimate knowledge of their holding, and engendering ownership and buy-in. In deciding on measures to achieve targets farmers will be required to avail of the support of a competent farm advisor. The Waters of Life project will provide training for farm advisors in RBAPS operation (action C.4).

The Waters of Life project, in collaboration with farmers, will decide the targets and the areas in which they apply. Therefore measures will be applied spatially on the basis of specific pressures identified (actions C.1 and C.2) and will not necessarily entail a whole-farm approach. An initial desk assessment of nine HS catchments has shown that pasture comprises about 54% of the catchment area. Based on an average farm size of about 25ha in these areas and assuming an uptake of approximately 70%, this suggests that in the region of 1,000 farmers may participate in the scheme. The proposed level of funding will allow payments to individual farmers of the order of €2,500 per annum over a period of four years.

Measures for other pressures (including public and private forestry) will be determined by the Waters of Life project through development of strategic catchment management plans (C.3) and implemented in accordance with measures implementation plans (C.6).

In the case of agri-measures, linking payments to assessment criteria in the RBAP scheme allows farmers to gain an understanding of the conditions required for delivery of natural capital and catchment services that are essential to high status waters. Eligibility criteria will be set for participation in the HS RBAPS in consultation with farmers and farming representatives and may include discrete spatial targeting of key issues and locations.

The RBAP scheme will be delivered within 16 months of project commencement. Provision for guidance, training and support in relation to measures selection and performance assessment is outlined below.

Reasons why this action is necessary:

Since the measures required to secure high status are beyond the requirements of basic statutory compliance, it is essential and proper that farmers are appropriately rewarded for maintaining the natural assets of HS catchments in near natural conditions that are

fundamental to protecting and restoring sites to high status as required in the River Basin Management Plan for Ireland. The scheme that will facilitate payments must be results based to ensure the required deliverables are met. Payments through the scheme must be based on transparent and agreed objective criteria that are robust and easily understood by participants.

Constraints and assumptions:

Achievement of this task is dependent on completion of project management task F.1, establishment of a Project Steering Group and project offices and recruitment of core project team. The task will require specialist external technical support and be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases. In completing this task the Waters of Life project will build on RBAPS models previously developed for use in Ireland and its further development and refinement will be informed by Action A.1 and will be supported through training for agricultural and forestry advisors, farmers, forest operators and relevant practitioners provided under action C.4 and C.5.

Expected results (quantitative information when possible):

Through this action the Waters of Life project will deliver a RBAPS for HS catchments in consultation with farmers and farming representatives. The scheme will entail ecosystem targets for farmed areas within HS catchments and quantified steps for their achievement. It will provide a scoring and payment system that is based on robust and easily understood assessment criteria and that will incentivise higher levels of performance and results delivery. Measures developed for application through the scheme will be implemented on approximately 25,000 ha of farmland in HS catchments and result in an estimated 40% change in sustainable landuse in demonstration catchments. Involvement in RBAPS is expected to result in behavioural change in 700 individuals through direct uptake of the scheme.

Deliverables:

A list of RBAPS ecosystem targets that reflect near natural catchment conditions required to support high status will be prepared by the Waters of Life project and agreed through consultation with farmers and stakeholders. Targets will be set for key relevant parameters essential to supporting high status waters and scheme eligibility criteria agreed.

A scoring system for assessment of results delivery that will allow for incremental achievement of targets will be prepared. The scoring system will reward progression between incremental phases and be agreed with stakeholders.

The Waters of Life project will prepare a payment scheme with payment levels that reflect the quality of results delivered as assessed by the agreed scoring system. Payments must also ensure that lower achievements are adequately rewarded to cover the cost of participation.

Milestones:

- An annotated list of Ecosystem targets with justification for their selection and specific objectives that are to be achieved. To be delivered within 6 months of action A.3 commencement.
- A scoring system for results assessment including details of criteria for evaluation and incremental steps. To be delivered within 9 months of action A.3 commencement.
- A payment scheme that reflects quality of outputs delivered and incentivises farmer performance. To be delivered within 15 months of action A.3 commencement.
- Guidance material to support scheme operation and training of participants and farmers.

- RBAPS including ecosystem targets, a scoring system for results assessment, and a payment scheme reflecting outputs delivered and incentivising farmer performance delivered by 1/03/2022
- Guidance for support scheme operation delivered by 1/03/2022.

ACTION A.5: name of the action

A.5: Initial community engagement regarding concrete actions

Beneficiary responsible for implementation:

DHPLG, Local Authorities, Teagasc

Description (what, how, where and when):

During the process of selection of demonstration catchments (Task A.3) the Waters of Life project initiate engagement with the local community and landowners. A series of community engagement initiatives will be undertaken as catchment shortlisting progresses in action A.3. These will include discussions with local farming organisations, farm advisors, individual farmers and landowners, and residents. Opportunities presented by existing local groups, networks, programmes and events will be maximised including engagement through structures such as the Pobal Rural Social Scheme, farming association meetings, hill and commonage farmers associations, marts, local newsletters and events organised by the project to facilitate such discussions.

The Waters of Life project will seek to inform the community about the project, its objectives and the actions being planned in their catchment during the process of initial community engagement, to gauge the level of participation and support that may be expected, and to persuade local communities of the merits of the project to maximise participation. The initial engagement will also take place during development of the RBAP scheme will provide an opportunity to get early input into design of measures and their implementation.

The task will be undertaken by the core Waters of Life project team with guidance and support from local agricultural advisors and LAWPro staff. Where appropriate, questionnaires may be devised to facilitate structured responses and data collation. The project team will compile a record of all landowners that express an interest in participating in the project.

Reasons why this action is necessary:

The final selection of demonstration catchments for trialling measures will be informed by this process of engagement to encourage maximum levels of participation and support so that project success is assured. Early engagement by the Waters of Life project with local communities is also essential to fostering a sense of partnership and ownership of measures that will be implemented. It also provides for community input into measures selection and design and raises awareness of HS sites within their catchment.

Constraints and assumptions:

The action will commence during the mid to later phases of the demonstration catchment selection task (A.3). Potential demonstration catchments must be reduced to a manageable number to allow targeted community engagement.

This preparatory action is essential to the implementation of the concrete actions and will be complemented by the wider engagement and communications actions described under task E.

Expected results (quantitative information when possible):
The action will guide the final selection of demonstration catchments and raise awareness amongst local communities, maximising their participation and assuring the success of the trial measures demonstration. It will provide essential baseline data on the type and extent of farming in the catchment and the communities' perception of issues that need to be addressed. It will provide feedback useful in planning bespoke catchment measures and their implementation.

Engagement will take place with multiple stakeholder groups, in particular landowners and the public, in a minimum of 5 catchments using a large variety of media and mechanisms.

Deliverables:
The action will aim to ensure that measures trials are situated in areas where local communities are informed and supportive of project objectives.

It will provide initial feedback to the Waters of Life project team on measures selection and design.

Milestones:

- Final selection of demonstration catchments within 15 months of completing A.1.
- Report on local community engagement and attitudes to project actions and objectives, and awareness of HS sites within 15 months of completing A.1.
- Initial community engagement re concrete actions completed by 1/03/2022.

ACTION A.6: name of the action

A.6: Investigate land ownership (commonage areas)

Beneficiary responsible for implementation:

DHPLG, Local Authorities, DAFM

Description (what, how, where and when):

Many HS waters are located in upland areas where extensive commonage is a feature, particularly along the western seaboard. Commonage land is owned by more than one person and typically each shareholder owns a defined fraction of the total commonage area. This is detailed on each shareholder's folios. In some instances farmers may have "grazing rights" on lands which do not involve any ownership. There are approximately 4,500 commonages nationally with 11,000 farms having a shareholding in one or more of them. Together they cover about 426,000 ha. The commonage lands are shown in purple in Map 2 below.

Map 2: Location of commonage lands in Ireland

Measures to be implemented by the Waters of Life project in commonage areas are likely to extend beyond the holdings of any individual and will require general agreement with all the relevant shareholders. Such measures could relate to stocking rates, riparian and hydromorphological measures. Therefore it will be necessary to identify the multiple shareholders involved and secure any necessary permissions and agreements before proceeding.

Reasons why this action is necessary:

Large tracts of many HS catchments are in commonage areas. Details of the ownership of such areas is necessary to allow discussions and agreement on implementation of any measures proposed by the Waters of Life project.

Constraints and assumptions:

Access to lands for measures implementation will require the consent and cooperation of landowners. Initial contacts have been made with development partnerships, LEADER companies, Irish Natura Hill Farmers Association / IFA (Hill Farming, Environment and Rural Affairs, Forestry, Sheep, Farm Family Committees) and sample letters of support have been provided.

The holding and processing of personal data is subject to the provisions of the General Data Protection Regulation (Directive 95/46/EC) and the Data Protection Act 2018. The Waters of Life project will ensure compliance with all relevant necessary requirements.

Expected results (quantitative information when possible):

This action will identify the shareholders in relevant commonage areas in the 5 demonstration catchments to enable engagement with respect to actions proposed and objectives of the project.

Deliverables:

The Waters of Life project will prepare a map of commonage areas in the demonstration catchments selected and establish the relevant shareholders to permit engagement by the project.

Milestones:

- Identification of shareholders in relevant commonage areas in demonstration catchments. This action will commence in the latter part of the catchment selection task (A.3) and will be completed in the same timeframe.
- Commonage stakeholders in demonstration catchments identified by 1/03/2022

ACTION A.7: name of the action

A.7: Secure Licenses / Permissions

Beneficiary responsible for implementation:

DHPLG, DAFM, Coillte, DAFM FS, Local Authorities

Description (what, how, where and when):

Implementation of some measures in demonstration catchments may require prior authorisation or consents, or formal consultation regarding the timing, management, organisation, and methods of execution of works. This may relate to notifiable actions in Natura sites, afforestation or felling licences for forestry actions, derogations for land use changes, IFI consents for in-stream works, excavations or re-profiling of banks associated with natural flood retention measures. Some of the measures implementation may need to consider seasonal factors such as weather events, vegetation growth periods or breeding and migration periods. In some instances it may be necessary to undertake measures screening for appropriate assessment.

Waters of Life project core staff will collate a list of pre-commencement requirements and constraints for all measures and project operations. This will allow necessary consents and permissions to be addressed in a timely manner for the selected catchments in advance of any works.

The process of identifying pre-commencement requirements can commence during the preparation of the framework of measures (A.2) as specific issues and requirements relating to measures emerge. Discharge of pre-commencement requirements by the Waters of Life project team will continue during demonstration catchment selection as more detailed location information becomes available and until implementation programmes commence.

Reasons why this action is necessary:

Statutory timelines for consultation and appeals in relation to any consents and licences required for proposed works, and administrative processing times can result in unforeseen and significant delays in project execution. It is imperative that such lead-in times are identified at an early stage and factored in to the Waters of Life project schedule of operations.

Constraints and assumptions:

Access to lands for measures implementation will require the consent and cooperation of landowners. Initial contacts have been made with development partnerships, LEADER companies, Irish Natura Hill Farmers Association / IFA (Hill Farming, Environment and Rural Affairs, Forestry, Sheep, Farm Family Committees) and sample letters of support have been provided. Expertise within the Management Group and the project team and familiarity with consenting procedures will facilitate completion of this action.

Expected results (quantitative information when possible):

The task will assess all proposed Waters of Life project actions and works in the 5 demonstration catchments in terms of pre-commencement requirements and constraints along with projected timelines required for their discharge. This will allow for timely initiation of necessary processes to ensure that project work schedules are closely adhered to.

Deliverables:

This action will deliver a register of pre-commencement requirements for all project actions with specified lead-in times to minimise risk to implementation schedules. The register will be maintained as a live document throughout the project and updated as details of specific tasks are identified and requirements are discharged.

Milestones:

- Register of Pre-commencement Requirements. This action will commence during preparation of the framework of measures task (A.2) and will be continue into the phase of implementation programmes roll-out task (C.7).
- Timely discharge of licence, consents, consultations and permits.
- Licence, consents, consultations and permits discharged by 1/06/2023.

ACTION A.8: name of the action

A.8: Review and elaborate a detailed work programme

Beneficiary responsible for implementation:

DHPLG in consultation with all Beneficiaries.

Description (what, how, where and when):

The initial phase of the Waters of Life project will provide a detailed picture of HS waters and their catchments, the natural capital and ecosystem services they provide that are crucial to supporting HS, the significant pressures that are in operation and the best practice measures that may be implemented for protection and restoration of such areas including a bespoke HS Results Based Agricultural Payment Scheme. The process will identify demonstration catchments for an integrated approach to measures implementation to resolve a range of pressure types. A process of engagement with the communities and landowners in these areas will be commenced to inform them of project objectives, convince them of the importance of HS sites, win their support and obtain their input to project initiatives.

Given the sensitivity of HS catchments to even small scale pressures, it is not possible to design broad-brush one-fits-all solutions for protecting or restoring HS waters. The tasks outlined in phase 1 are absolutely necessary to facilitate an interim review of project actions and to allow a detailed work programme to be elaborated based on site specific issues and solutions. The unique characteristics of the selected demonstration catchments, including landscape, topography, hydrology, ecology, land ownership, extent and nature of pressures, and critical source areas, will dictate the bespoke approach by the Waters of Life project to achieving its objectives of protecting and restoring HS water. Geographic location of catchment areas will also have a large influence on the recruitment of local project teams.

Therefore this action will provide for a review of specific issues relating to the areas of proposed project operation and develop a detailed programme of works for the next project phase in an adaptive management approach. The core Waters of Life project team will undertake the task in close collaboration with all project beneficiaries and as guided by the project's Steering Group.

Reasons why this action is necessary:

The need for bespoke solutions to HS water issues is well evinced by the lack of effectiveness of basic and spatially extensive actions and their failure to halt the continued decline in the number of remaining HS sites. The preparatory phase of the Waters of Life project will provide essential details relating to demonstration catchment particulars and issues to be addressed. Project actions need to be reviewed in this context to ensure that the detail of actions being proposed by the Waters of Life project are most appropriate and to allow a detailed work programme to be developed.

Constraints and assumptions:

This task builds on the outputs delivered during the project's preparatory phase to further hone project objectives and actions to the precise needs of the HS sites in the demonstration catchments. The action will not result in any fundamental changes in the project but bring a more informed and evidence based focus to further actions.

Expected results (quantitative information when possible):

This action will result in a review of project outputs to date and their implications for ongoing implementation and any refinements required. It will provide an opportunity to critically assess objectives and the catchment specific actions required for their ongoing successful achievement.

Deliverables:

The action will deliver an objective review of outputs to date and identify any lessons learnt and implications for ongoing Waters of Life project implementation. It will incorporate the findings of this review and the cumulative results to date into a detailed work programme for the next phase of the project.

Milestones:

- Project Interim Review Report to be delivered at the end of the preparatory actions phase and within 3 months of demonstration catchment selection.
- Detailed Project Work Programme - Phase 2. To be delivered within 3 months of demonstration catchment selection.
- Phase 1 and Work Programme-Phase 2 completed by 1/06/2022.

C. Concrete (conservation/implementation) actions

For each action or set of actions specify the following:

ACTION C.1: name of the action

C.1: Catchment Walkover Investigations

Beneficiary responsible for implementation:

DHPLG, Local Authorities, EPA, Coillte, DAFM FS

Description (what, how, where and when):

Strategic management plans will be prepared for each of the demonstration catchments and for the control catchment chosen. The plans will build on previous EPA characterisation of Water Framework Directive catchments based on monitoring data and modelling outputs including Pollution Impact Potential mapping. They will identify and prioritise pressure sources in order to develop tailored and targeted catchment management interventions and be based on a comprehensive review of historical and spatial evidence.

Existing characterisation data is not of sufficient spatial resolution to allow preparation of the detailed plans required to adequately address significant but localised pressures relevant to HS sites. The strategic catchment management plans will therefore be informed by a detailed field investigation in the demonstration catchments in a phased approach. External technical support will be required to complete the investigations required that will allow preparation of the catchment strategic management plans.

Initially catchment walkover investigations of the selected demonstration catchments by the Waters of Life project will complete a rapid identification and mapping of catchment features and pressures requiring further investigation. Walkover investigations will be based on methodologies established during preparation of previous freshwater pearl mussel sub-basin plans in Ireland. This involves an initial desk study and planning the investigation based on a range of available data sources. These include orthophotography, EPA risk assessment and pressure datasets, Corine land cover mapping, LPIS and FIPS data and drainage networks. It is essential that some members of the investigation team have an in-depth understanding of physical river structure and hydromorphology together with an expert familiarity with potential pressures in the surrounding landscape. During the preliminary desk study the Waters of Life project team will identify a series of stopping points in the individual catchments. They will also prepare pro forma recording sheets that will facilitate the collation of pressure data in the field. At each stopping point pressures will be identified and categorised by type, and an on-site assessment of pressure degree or intensity will be made. Pressures that require further investigation will be noted including agriculture, forestry, hydromorphological change, wastewater discharges, gravel extraction, barriers to fish migration and any other activities that may give rise to nutrient or sediment release to surface waters.

A detailed field description, together with a series of accurately geo-located photographs outlining the pressures will also be recorded on-site. In appropriate situations this will include aerial photographs obtained using drones to expedite the field survey investigation and ease access in more difficult terrain. Aerial photographs may also help in identifying recent hydromorphological and drainage changes and inform natural flood retention measures.

It is anticipated that the preliminary planning and execution of the walkover investigations can be completed in a period of one month per catchment depending on the accessibility of catchment areas, the complexity of the catchment landscape and the range of pressures encountered. Preparatory work can commence during the final phase of selecting the demonstration catchments and the action will be completed within six months. The Waters

of Life project will analyse the data delivered by the walkover investigations to identify and map critical areas for further investigation by way of detailed follow-up field investigations (action C.2).

Based on walkover investigations the project will identify and prioritise areas for further investigation and sampling to confirm agricultural measures required and inclusion in the RBAP scheme. Prioritisation will consider intensity and extent of pressures (including cumulative effects), proximity to sensitive receptors and pathways for potential impact recorded in the initial catchment investigations. This will be carried out by core Waters of Life project staff in consultation with project beneficiaries and with the support and guidance of local agricultural advisors and an experienced hydrologist. Since participation will require landowner consent and cooperation it is essential that the RBAP scheme provides appropriate incentives to maximise participation of landowners in these areas (action A.4).

The Waters of Life walkover investigations will identify forest stands that are giving rise to pressures, or that are likely to result in pressures being realised at some future stage in the forest management cycle. These stands may be public or private forestry and will be subject to further investigation in action C.2.

Other significant point pressure sources will be recorded and mapped during the walkover investigations. Where these are frequent and extensive throughout the catchment the cumulative pressure they exert on HS sites will be considered in determining the measures required.

Reasons why this action is necessary:

It is necessary to understand fully the processes operating in demonstration catchments that are relevant to supporting HS waters and to identify the specific significant pressures and confirm the locations where they are present and the pathways that facilitate impact on HS waters. This will allow a strategic plan to be prepared (action C.3) setting out an integrated approach to mitigating pressures and thus protecting or restoring HS sites. A phased approach to catchment characterisation, commencing with catchment walkover investigations, will be most resource efficient and facilitate early identification of critical areas in catchments for further detailed investigation.

Constraints and assumptions:

Completion of this task will require expert knowledge of hydromorphological processes and understanding of the pressure sources, pathways and key receptors in catchments. The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply.

Expected results (quantitative information when possible):

This action will result in a rapid investigation of the control catchment and 5 demonstration catchments to identify and record the significant pressures operating on HS waters and the core locations where they apply. Critical priority pressure areas that are key to effective mitigation will be identified and mapped for further follow-up investigations (action C.2).

Deliverables:

The action will deliver 6 catchment walkover investigations that will identify, document and map the areas where significant pressures are present. The walkover investigations will be the basis for detailed site assessments in targeted follow-up investigations (action C.2)

Milestones:

- Initial Catchment Walkover Investigations completed by 1/09/2022.

ACTION C.2: name of the action

C.2: Follow-up Catchment Investigations

Beneficiary responsible for implementation:

DHPLG, Local Authorities, EPA, Coillte, DAFM FS

Description (what, how, where and when):

The first phase of demonstration catchment investigation (action C.1) will identify significant pressures operating in the catchments that require further investigation and map their locations. In this phase the Waters of Life project will undertake the necessary detailed field investigations required to confirm the nature and degree of pressures and the precise locations at which measures will be applied. Follow-up investigations will be conducted where critical source and risk areas have been identified and mapped by the walkover investigations. These will include physico-chemical sampling, hydromorphological assessment and vegetation/habitat mapping in the areas identified.

Physico-chemical sampling will provide quantitative information on pressures and pollutant levels and confirm pathways. The Waters of Life project will focus on nutrient loads, in particular phosphorus levels, which are key parameters relevant to high status freshwater sites. Sediment loads will also be estimated by the project using direct measurements of total solids and by using turbidity measurements as a proxy for sediment loads.

The Waters of Life project will assess hydromorphological status using rapid assessment tools such as the Morphological Quality Index (EU-funded REFORM project), or the River Hydromorphological Assessment Technique (Interreg NS SHARE project and NIEA). Hydraulic audits of sites will be conducted by an experienced hydrologist. Hydraulic audits are key to understanding present and future dynamics of water bodies in the context of proposed measures. They will provide an analysis of sediment and channel dynamics to assess the possible extent of sediment problems and locations at which interventions such as natural flood retention measures should be sited.

In agricultural areas where significant pressures have been identified, the Waters of Life project will prepare general vegetation/habitat maps at an appropriate scale. These will form the basis for determining relevant targets and objectives and the appropriate scoring parameters when applying the RBAPS assessments.

Coillte forestry advisors, with support from core project staff and using expert hydrological expertise will carry out audits of forest stands identified through the initial catchment walkover survey. This will include a review of forest management plans including size and scheduling of coups, road construction, fertilisation and re-afforestation. Other factors to be considered will include history of the site, development stage in forest cycle, hydrology, soils, topography, presence of buffer zones, and species composition. The audits will determine the most appropriate measures for mitigating potential impacts and the locations at which they should be applied. Participation will require landowner consent and cooperation in the case of private forestry.

Other pressure sources that will be considered and recorded as necessary are wastewater impacts from on-site wastewater treatment systems (septic tanks) or from urban wastewater treatment facilities, peat harvesting and access roads (including fords), illegal dumping, and gravel extraction. This is not an exhaustive list of the potential pressures encountered.

The field investigations above will also allow important catchment features to be recorded and mapped, and provide an additional opportunity for the Waters of Life project team to engage with local landowners and communities and build relationships. This will allow them to highlight issues impacting upon HS sites and raise awareness and appreciation of the need for action.

It will also be important to carry out investigations in the control catchment to confirm the extent of pressures for comparison with other demonstration catchments and identify locations for strategic monitoring to identify any status drift over the period of the project. It may also be possible to pilot some climate change mitigation measures in plots within the control catchment such as planting for shading and temperature control in fishery nursery streams.

Follow-up investigations can run in parallel with the end phases of the initial walkover investigations and will be completed over a period of six months.

Reasons why this action is necessary:

It is necessary for the Waters of Life project to objectively and scientifically confirm the nature and extent of pressures identified in the initial catchment walkover investigations by way of focussed investigations. The follow-up investigations will inform the detail of the strategic catchment management plans (action C.3). This will ensure that resources are applied most effectively and address the pressures of greatest significance based on the source-pathway-receptor paradigm. The need for macro-measures that extend beyond individual holdings will be identified. This may include measures to restore the hydrological integrity of areas of blanket bog.

Constraints and assumptions:

Completion of this task will require expert knowledge of hydromorphological processes and the pressure sources, pathways and key receptors in catchments. The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply. Seasonal and weather constraints may apply to some of the sampling envisaged but the duration of the task and the range of investigations will allow flexibility and an adaptive approach to any such issues.

Expected results (quantitative information when possible):

This action will result in a detailed examination of critical pressure areas in the demonstration catchments to confirm the nature and extent of the pressures operating on HS waters and any significant risks to retaining or restoring high status. This information will allow a bespoke strategic plan to be formulated for each catchment that will set out an integrated programme of targeted measures for protecting or restoring high status and the preparation of a monitoring programme to establish baseline conditions and monitor effectiveness of measures implemented. It is estimated that catchment investigations will identify a range of pressures requiring measures to be put in place across some 25,000 ha of farmland (including 3,000 ha in commonage), and 15,000 hectares of privately and publicly owned forestry land.

Deliverables:

The action will deliver a series of follow-up investigations that will provide scientific evidence of the nature and extent of pressures in the demonstration catchments and identify key locations for establishment and implementation of measures.

Milestones:

- Detailed catchment follow-up investigations completed by 1/09/2022.

ACTION C.3: name of the action

C.3: Catchment strategic management plans

Beneficiary responsible for implementation:

DHPLG in consultation with all Beneficiaries

Description (what, how, where and when):

The Waters of Life project will prepare a strategic management plan for each of the 6 HS catchments chosen. The plans will be informed by the catchment investigations carried out in actions C.1 and C.2 and by previous characterisation and modelling outputs. They will set out an overview of the demonstration catchment. This will include a description of the HS waters within the catchments and the issues identified that are affecting them.

The plans will set out the nature and locations of measures to address the pressures identified. This will include mapping of agricultural areas in which the RBAPS will be prioritised. Action A.2 will prepare a framework of HS measures and guidance for their implementation. While the precise detail of measures to be chosen and their implementation must await the selection of catchments and survey of specific issues operating within them, it is possible to determine the generality of the type of measures that will be required with a high degree of confidence based on our existing knowledge of high status catchments in Ireland. Innovative measures such as the use of virtual fencing will be included amongst those considered for implementation through the catchment strategic management plans.

Measures relating to sediment and nutrient losses and to restoration of intact hydrological systems will include consideration of

- management and reduction of drainage intensity
- re-wetting of bogs through damming of drains
- creation or extension of riparian buffer strips
- establishing riparian native woodland
- restoration of flood plain connectivity
- installation of natural water retention measures
- farm nutrient management
- livestock control measures
- restructuring forestry plantations
- strategic land use changes
- remediation of defective wastewater treatment systems

Measures to raise awareness and appreciation of HS waters and to effect behavioural change are also core actions and are dealt with under E. Public Awareness and Dissemination Actions.

Having identified pressures and measures and priority areas for action, the strategic catchment management plans will set out monitoring programmes to establish baseline conditions for key parameters and to monitor the effectiveness of measures implemented. The monitoring programme will be informed by outputs of actions A.1 and A.2 and in particular by D.1 (Establish environmental monitoring programme) which will run in parallel with this action.

The preparation of strategic management plans will commence as soon as demonstration catchments have been selected. Strategic plans for all demonstration catchments will be completed within 9 months. The core project team with external technical assistance will undertake the preparation of plans.

Reasons why this action is necessary:

It is necessary for the Waters of Life project to prepare strategic plans that will consider pressures and measures at an integrated catchment scale and covering all sectors and activities. Such an approach is critical to effectively resolving the impacts on HS waters that are currently leading to status loss.

Preparation of strategic plans will allow us to understand fully the processes operating in the demonstration catchments selected that are relevant to supporting HS waters. Through them the Waters of Life project will identify the relevant significant pressures and confirm the locations where they are present and the pathways that facilitate impact on HS waters. This

will allow an integrated approach to mitigating pressures and thus protecting or restoring HS sites.

Constraints and assumptions:

Completion of this task relies on outputs from investigations under actions C.1 and C.2. The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply.

Expected results (quantitative information when possible):

This action will result in 6 strategic catchment management plans that will be based on detailed examinations and investigations of the demonstration catchments. The plans will identify the pressures operating on HS waters and any significant risks to retaining or restoring high status. Critical priority pressure areas that are key to effective mitigation will also be identified. This information will allow the Waters of Life project to deliver a programme of bespoke targeted measures for each catchment for protecting or restoring high status and a monitoring programme to establish baseline conditions and monitor effectiveness of measures implemented. It is estimated that the strategic plans will identify measures to be put in place across some 25,000 ha of farmland (including 3,000 ha in commonage), and 15,000 hectares of privately and publicly owned forestry land.

Deliverables:

The action will deliver 6 Strategic Catchment Management plans setting out explicit catchment details with relevant mapping including data relating to water status, land use, hydrology, population distribution, pressure types, sources and locations. The plans will provide scientific evidence of the nature and extent of pressures and identify key locations for establishment and implementation of measures. Plans will also set out a programme of monitoring to establish baseline conditions for key specified parameters

Milestones:

- Strategic Catchment Management Plans completed by 1/12/2022.

ACTION C.4: name of the action

C.4: Deliver training for agricultural and forestry advisors

Beneficiary responsible for implementation:

DHPLG, DAFM, Local Authorities, Teagasc

Description (what, how, where and when):

A framework of measures for HS catchments will be collated under action A.2, and a HS RBAPS will developed under A.4. The implementation and monitoring of measures and the RBAPS scheme is dependent on the availability of the necessary scientific, agricultural and forestry expertise and skills to underpin delivery. The required expertise resides within project beneficiaries although specific elements may be confined to discrete sections within them.

There is a need for capacity building and training for regional and national stakeholders, including the project beneficiaries. This will ensure the continuation and replication of the project on a national basis. The project will support such additional capacity building and training required and this will be funded through the Exchequer as part of the normal national budgetary cycle. Farmers will continue to be supported in the After-LIFE phase, as part of the embedded farm advice system operated by the Agricultural Sustainable Support and Advisory Programme and/or Teagasc.

The LIFE Integrated Project will bring together the key actors to work jointly on the selected pilot catchments. This will allow the organisations to work together to demonstrate and develop long-term approaches to the protection of high-status waters and the sustainable management of their catchments. Key to the success of this joint working will be the quality of the recruited project management team and the recruited locally based catchment teams. As our collective knowledge develops, informed by additional work by the Blue Dot Programme and other programmes under the River Basin Management Plan the DHPLG expects the understanding of high status catchments to develop rapidly.

Constraints regarding lack of knowledge/experience either at a technical or institutional level have been identified on how to implement the commitment in Ireland's River Basin Management Plan for the protection of High Status waters. During the preparatory phase of the project, such constraints will be addressed by developing a framework programme for Capacity building.

To facilitate Capacity building an Action Plan will be developed. This will include the following draft elements as set out in the Gantt chart below:

- an initial assessment of training needs amongst implementing agencies, national and regional stakeholders, and beneficiaries highlighting any shortcomings as regards knowledge/experience in specialist areas e.g. hydromorphology
- detailed breakout of training/capacity building envisaged needs specifying sectors etc with training required and duration of training
- multidisciplinary workshops on drivers of status in HS catchments
- access to, and familiarity with data sets relevant to management of HS waters
- structures/mechanisms to facilitate interagency cooperation and knowledge transfer in relation to protection and management of HS catchments.

CAPACITY BUILDING DRAFT PROGRAMME	2020				2021				2022				2023				2024				2025				2026			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Assessment of Training Needs							✓	✓																				
Sectors Identified								✓	✓																			
Workshops on Drivers of Status										✓		✓		✓													✓	
Datasets for HS Management										✓	✓	✓															✓	
Interagency Cooperation / Knowledge Transfer													✓	✓	✓												✓	

The project core team will deliver a training programme to provide relevant training for Agricultural Advisors and Forestry Advisors/Inspectors who operate in the demonstration catchment areas. Training will emphasise the sensitivity of HS waters to sediment and nutrient inputs and to hydrological changes, and the role of land use change and intensification in these processes.

Farm advisors must be equipped with the necessary scientific, ecological and hydrological knowledge to support local farmers in the delivery of the RBAPS. Training will provide a comprehensive understanding of scheme targets and scoring system, and the range of best practice measures that may assist in on-farm target delivery so that they can provide practical and robust advice to farmers. They will also receive training in assessment of scheme outputs and system response to farming practices using result indicators based on the scoring system developed, including the role of indicators as surrogates for ecosystem attributes supporting HS waters. Training will also provide advisors with a comprehensive understanding of the scheme's payment structure.

Forestry advisors must have a clear understanding of the type of forestry practices that can impact on HS in these sensitive catchments. Practices that may be acceptable elsewhere may not be compatible with protecting and enhancing HS waters. There is a range of forestry initiatives and established measures that aim to protect sensitive aquatic systems including:

- the Native Woodland Establishment Scheme (https://www.teagasc.ie/crops/forestry/grants/establishment-grants/native-woodland-establishment/)
- the Native Woodland Conservation Scheme (https://www.teagasc.ie/crops/forestry/grants/management-grants/native-woodland-conservation/)
- Forestry Programme 2014 – 2020 Environmental Enhancement of Forests Scheme (https://www.agriculture.gov.ie/media/migration/forestry/forestryprogramme2014-2020/IRELANDForestryProgramme20142020230215.pdf)
- Plan for Forests and Freshwater Pearl Mussel in Ireland (https://www.agriculture.gov.ie/forestservice/publicconsultation/planforforestsfreshwaterpearlmusselinireland/).

Training will guide the selection of the most appropriate forest management options and be guided by outputs of actions A.1 and A.2.

Training will take place at suitable locations within or close to the demonstration catchments and will also involve practical field elements. The locally based project teams will promote awareness of the RBAPS and available training amongst commercial farm and forestry advisors through direct contact and articles in relevant sectoral publications.

Reasons why this action is necessary:

Farm and forestry advisors are a crucial link in ensuring that best practice options are selected during farming and forestry operations. The requirements for sustainable land use in HS catchments goes beyond that normally promoted by technical support personnel in forestry and agriculture. Therefore up-skilling in relation to the specific needs of HS waters and farming and forestry operations is necessary. The RBAPS agri-scheme will be a bespoke solution for trialling in HS catchments and therefore advisors will require appropriate training in its operation.

Constraints and assumptions:

This action will rely heavily on the support of the locally based catchment teams recruited under action F.4. Training will also require relevant technical and scientific input from personnel involved in A.1, A.2 and A.4.

Expected results (quantitative information when possible):

The action will provide specific training to advisory personnel on issues relating to farming and forestry in HS catchment areas. A minimum of 5 training days will be delivered and approximately 40 personnel will receive training in order to provide sufficient capacity to support measures implementation in the demonstration catchments.

The action will result in a framework programme for Capacity building that will ensure the continuation and replication of the project on a national basis and facilitate implementation of the commitment in Ireland's River Basin Management Plan for the protection of High Status waters.

Deliverables:

The action will deliver a cohort of advisors with specific relevant knowledge to guide farming and forestry operations in HS catchments in a sustainable fashion. Farming advisors will be familiar with the bespoke RBAPS in terms of targets, performance indicators and payments structure. The action will deliver detailed training/capacity building relevant to the needs of national and regional stakeholders in specified sectors.

Milestones:

- Delivery of 5 number training days within six months of establishing locally based catchment teams in F.4.
- Agricultural and farm advisors trained by 1/12/2022.

ACTION C.5: name of the action

C.5: Deliver training for farmers, forest operators and relevant practitioners

Beneficiary responsible for implementation:

DHPLG, DAFM, Coillte, DAFM FS, Local Authorities, Teagasc

Description (what, how, where and when):

It will be necessary for farmers and foresters operating in the demonstration catchments to gain familiarity with and understanding of the agri-environmental scheme and the practical concrete measures being proposed in the project. This is essential to building confidence in the effectiveness and acceptability of measures and to encourage participation in project programmes.

The training will be delivered substantially through visits to selected sites to witness and discuss the environmental issues relevant to supporting HS. The Waters of Life locally based catchment teams will prepare the training programme and locate appropriate sites and landowners willing to host visits. Visits to Freshwater Pearl Mussel EIP sites and Kerry Life demonstration sites will be arranged. Technical support will be provided by the core project team. Training events will be organised in close collaboration with host landowners and with support from the project beneficiaries. Targeted outputs for relevant scenarios will be explained on site and guided discussions will explore the measures that may be implemented to achieve them.

Results indicators used to assess progress in delivery of results will be explained in a non-technical manner so that practitioners have a clear understanding of what is required by measures and how the indicator system is operated. Additional off-site illustration of measures in operation, and peer-to-peer discussions will be facilitated where appropriate. These will provide an opportunity to get feedback on actions, in particular any suggestions on how they might be improved or made more acceptable to landowners.

Reasons why this action is necessary:

It is essential that farmers, foresters and landowners witness on-site practical demonstrations in order for them to have confidence in measures and actions being proposed by the project. Peer-to-peer discussions and knowledge transfer is a proven highly effective mechanism for obtaining support in these traditionally conservative industries. Feedback during this action will also allow for an adaptive approach to project implementation and further promote a sense of ownership amongst local communities.

Constraints and assumptions:

Effective delivery of this action requires the identification of suitable sites and willing host landowners. Publically owned forests will be readily accessed by the project through its Coillte beneficiary. Locally based catchment teams working closely with other beneficiaries (DAFM, Teagasc) will be best placed to identify private forest owners and farmers and convince them of the merits of supporting the project.

Expected results (quantitative information when possible):

The action will provide a mechanism for local landowners and practitioners to gain an understanding of the project's objectives and the measures to be implemented in a practical and familiar setting. It will foster a sense of ownership and trust.

Form F.5 estimates the number of participating farmers at approximately 750 in the 5 selected catchments. A decision on whether these training days will be compulsory for participating farmers has yet to be made, however based on experience with other similar programmes, it is anticipated that if the training was not compulsory, participation rates would still be in excess of 50%. Therefore it is anticipated that at a minimum, 350-400 farmers/landowners/foresters will attend the training.

Deliverables:

The actions will deliver a practical training programme to introduce practitioners to the project actions and objectives. The programme will include 2 one-day training events in each of the 5 demonstration catchments (the training will not be required in the control HS catchment).

Milestones:

- Schedule of training events and site visits to representative catchment areas within 3 months of recruiting locally based catchment teams.
- 10 training events to be delivered in demonstration catchments within 9 months of recruiting locally based catchment teams.
- Farmers and practitioners trained by 1/03/2023.

ACTION C.6: name of the action

C.6: Prepare implementation plans in agreement with local landowners

Beneficiary responsible for implementation:

DHPLG, DAFM, Local Authorities, Coillte, DAFM FS, Teagasc

Description (what, how, where and when):

The project will have identified priority areas for action in the demonstration catchments through detailed characterisation A.1 and particularly during the preparation of strategic management plans in actions C.1, C.2 and C.3. Relevant landowners will be canvassed by the locally based catchment teams and supported by project beneficiaries to promote participation in measures implementation. Participation by landowners in core target areas identified and prioritised in the strategic management plans will be incentivised in the project's payments scheme. This action is a focussed follow-up action to A.5 Initial Community Engagement re Concrete Actions and will run in parallel with C.5 which provides for training of local practitioners. It will benefit from relationships established earlier and increased levels of awareness among the target group. Building on previous contacts, the team will explain the detail of proposed actions and the benefits to participating landowners and socio-economic benefits for the wider local community.

Detailed measures implementation plans will be prepared for each priority area on participating lands and in close consultation with the landowner and informed by actions A.1 and C.1, C.2 and C.3. The measures implementation plans will be based on comprehensive on-site surveys of the area carried out by the project team with appropriate technical input and supported by the relevant project beneficiaries, and augmented with operational information and practical experience provided by the landowner. Surveys will include recording of current land use and management practices; identifying and mapping pressure types and critical source areas; identification and mapping of pathways, especially drainage pathways. Forestry, agricultural and specialist hydrology expertise will be required to prepare the implementation plans and identify precise locations for siting of measures.

It will also be necessary to survey habitats/vegetation types currently present in the target area at an appropriate scale and make an assessment of their general condition using a standard scheme for classification. This information will allow appropriate agri-scheme targets and concrete HS measures and actions to be selected in line with the model illustrated below for RBAPS development and implementation (https://rbaps.eu/) and as described in further detail in Action A.4 and Action C.7.

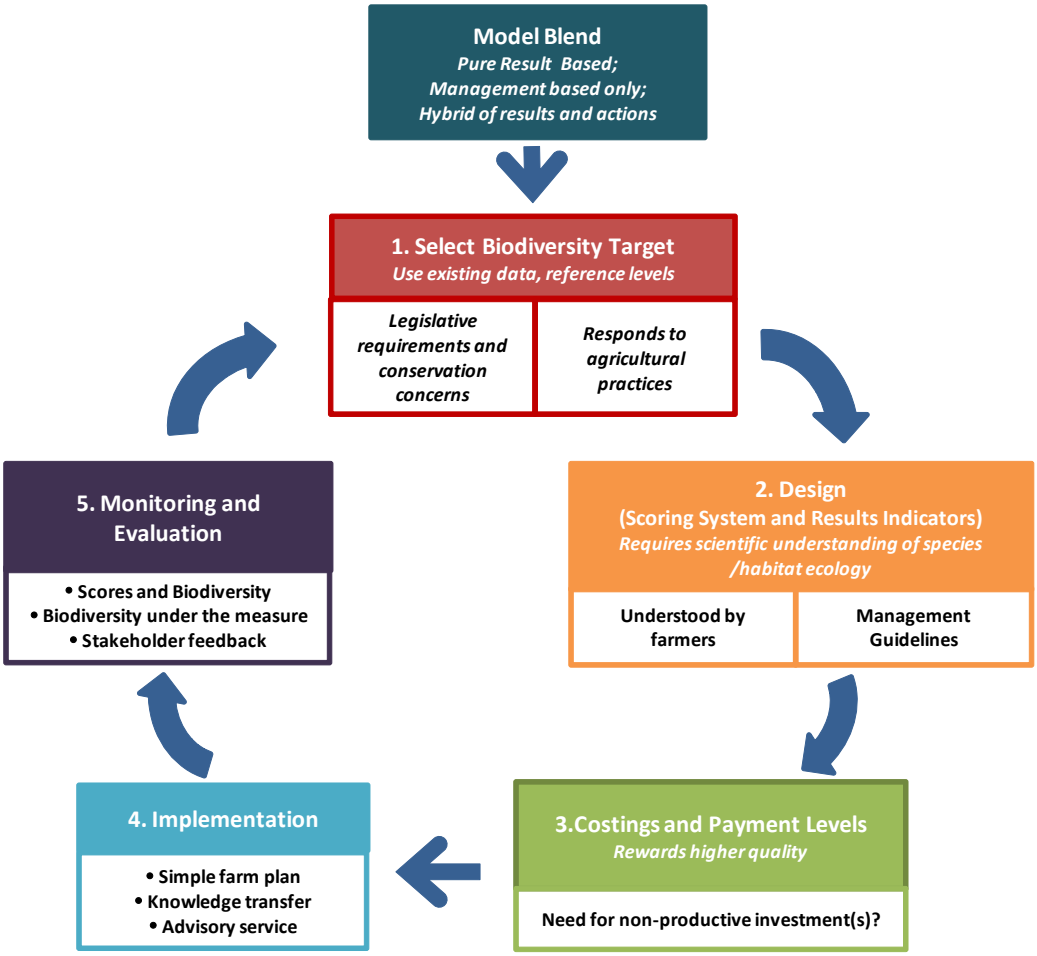


Figure 4: Development and Implementation of RBAPS (RBAPS ES02)

Implementation plans will include a comprehensive description of the actions to be taken on each holding and maps of precise location at which measures will be deployed. For capital measures it will set out the works required by way of method statements and include timeframes and any constraints or specific mitigation required during works. Costings will be agreed and provided for each action. A practical user-friendly schedule of the works and actions required along with stipulated timelines will be prepared to summarise measures implementation. The final implementation plan will be formally agreed with the landowner and any contractual requirements completed.

Preparation of implementation plans and agreement of measures with the local community and landowners will overlap with development of the catchment strategic management plans and will bring focus and detail to the strategic plans. Preparation of implementation plans will commence when demonstration catchments have been selected (A.3) and will be completed within 9 to 12 months.

Implementation and effectiveness of measures will be subject to regular monitoring (D. Monitoring of the impact of the project actions). Monitoring will confirm proper measures installation, operation and effectiveness, and identify possible improvements.

Reasons why this action is necessary:

The sensitive nature of HS waters and the unique attributes of individual catchments require precise and bespoke application of measures in order to sustain or restore HS. Such measures cannot be delivered without the collaboration and input of landowners. This action will deliver the detail and focus required for effective selection and siting of appropriate measures and incorporate landowner knowledge and experience as part of any solutions

proposed. Landowner and community ownership of actions is essential to the long term protection and restoration of HS waters.

Constraints and assumptions:

This action requires the prior selection of demonstration catchments and relies on the preparation of strategic catchment plans. It must build on initial community engagement and project promotion that will help to secure landowner participation. In particular, the agri-environment scheme will need to be acceptable to farmers and sufficiently funded to incentivise participation.

Expected results (quantitative information when possible):

The action will secure buy-in from landowners in areas prioritised for action in the demonstration catchments. Detailed survey of these areas will allow preparation of (up to 30) implementation plans to address key pressures impacting on HS waters in 25,000ha of farmed land. In particular this is estimated to result in an increase in biodiversity in 2,500 ha of grasslands.

Deliverables:

The action will deliver integrated, practical and robust programmes for implementation of specified measures in priority catchment areas to sustain HS waters. These plans will be co-developed, agreed with, and informed by landowners and thus secure long term ownership of actions necessary for sustainable land use.

Milestones:

- Implementation plans agreed with landowners by 1/03/2023.

ACTION C.7: name of the action

C.7: Implement programmes of measures across all demonstration catchments

Beneficiary responsible for implementation:

DHPLG, DAFM, Local Authorities, Coillte, DAFM FS

Description (what, how, where and when):

Action C.7 is the core Waters of Life project implementation action. It will deliver numerous concrete actions which at this early stage of the Waters of Life project cannot be adequately resolved into discrete actions with sufficient detail. Further definition will be delivered on completion of the preparatory A actions and the review and elaboration of a detailed work programme at the end of phase 1 of the project. While the precise detail of actions will be provided in the detailed work programme (A.8), it is possible to provide the generality of the type of actions that will be delivered with a high degree of confidence based on our existing knowledge of high status catchments in Ireland. The actions may include:

- blocking of drains in forestry and agricultural lands
- installation of dams in blanket bog areas
- planting of native woodland in riparian zones
- felling of conifers to extend or create riparian buffers
- restructuring forestry plantations and creation of continuous cover forestry
- installation of fencing to control livestock access and movements
- re-profiling of river embankments and channel modification to restore flood plain connectivity
- installation of natural water retention measures such as 'beaver dams', offline storage structures, peak flow control structures, creation of detention basins and ponds
- strategic land use changes and extensification of agriculture
- remediation of defective wastewater treatment systems

Based on implementation plans and method statements (C.6) and ensuring that all necessary permits and consents are in place (A.7) landowners will undertake measures implementation. Many actions will be undertaken directly by the landowner, but where landowners recruit contractors for necessary works guidance will be provided by the project team to ensure that best practice methods are employed in accordance with the framework of measures and guidance prepared under A.2 and the method statements in implementation plans (C.6). The project catchment teams will certify discrete infrastructural measures on completion of installation. Other actions involving changes in land use or management practices will be assessed by results based scores through RBAPS or by ongoing survey by the project team and relevant beneficiaries, and through landowner records of implementation.

Infrastructural measures will require maintenance and upkeep throughout the project duration. Regular visits by landowners, beneficiaries and locally based catchment project teams will ensure that measures are intact and performing optimally. Comprehensive monitoring programmes will be put in place to evaluate measures performance and environmental responses (D.1).

An adaptive management approach will be taken to implementation. Any deficiencies in measure performance detected by monitoring programmes, issues of measures acceptability and unforeseen consequences will be documented and programmes will be amended accordingly to maximise effectiveness and delivery of results.

The initial phase of measures roll-out will commence during the final phase of co-development of measures with landowners (C.6). Ongoing implementation, maintenance and adaptive changes will continue throughout the remaining duration of the project.

The locally based catchment teams will liaise with the core project team in relation to administrative arrangements for managing and financing measures. They will also provide

ongoing advice, guidance and support to landowners as required to ensure the measures programmes are delivered effectively.

The RBAPS described in Action A.4 will award payments to farmers on the basis of the quality of the desired environmental outcome that is delivered. RBAPS payments can also be combined with payments for non-productive investments and prescriptive mandatory measures, for example where catchment-wide issues extending beyond individual farms must be addressed.

A variety of RBAPS models and schemes where payments are linked to performance in reaching environmental goals have been previously implemented in Ireland: Burren LIFE (http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=2661), Kerry LIFE (http://www.kerrylife.ie/), Pearl Mussel Project EIP (http://www.pearlmusselproject.ie/). These models will form the basis for the Waters of Life project to adapt a practical scheme relevant to measures for protection and restoration of HS sites (HS RBAPS) which will be developed in accordance with guidance developed by the RBAPS Project (https://rbaps.eu/documents/guidance-documents/) and illustrated in Action C.6. It will be delivered by the Waters of Life core project team in consultation with the relevant project beneficiaries and with specialist external technical support to ensure that the necessary specialist and scientific expertise is available to develop the RBAPS scorecard, design monitoring and evaluation, and provide guidelines. It will be designed in consultation with farmers and farming representatives to promote farming practices that deliver truly sustainable land use in HS catchments, build local trust and capacity, and enable co-creation and innovation. The Waters of Life project will be careful to ensure that all scheme outcomes delivered are additional to statutory obligations and will not result in dual payment under any existing schemes.

The Waters of Life project will ensure that RBAPS targets and results assessment scores will incentivise actions that promote ecosystem integrity and remove threats to future HS prospects. This includes targeting systems that replicate natural hydrological and ecological systems with little disturbance. Examples of areas of action for inclusion in RBAPS are vegetation structure and areas of bare soil that reflect grazing pressures; drainage intensity and depth which impacts on site hydrology and groundwater flows; species rich grassland and floodplain meadows that reflect natural site hydrology with reduced nutrient inputs; active raised bog areas that retain water and reduce flood peaks; native woodland that creates buffers and reduces sediment losses in surface flows; bank erosion and poaching due to livestock access. The Waters of Life project will set targets for specific parameters using existing data on key pressures and known responses to agricultural practices, and informed by the deliverables in action A.1. A framework of measures that may be applied in achieving the RBAPS targets will be developed under action A.2.

A scoring system will be devised for the HS RBAPS that is robust and simple to manage and can be readily understood by farmers. The scoring scheme will incentivise performance and payments will be proportional to quality of outputs delivered (see Figure 5 below). Objective criteria for assessing performance and guidance to support scheme implementation will be developed under Action A.4 and agreed with farmers and farming representatives. In deciding on measures to achieve targets farmers will be required to avail of the support of a competent farm advisor. The Waters of Life project will provide training for farm advisors in RBAPS operation (Action C.4).

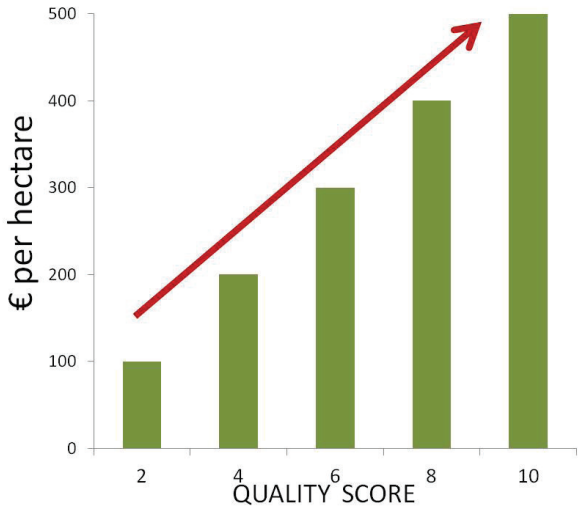


Figure 5: Quality Score and relationship to RBAPS payments (RBAPS ES02)

Participation in the RBAPS will be voluntary and therefore it must be socio-economically acceptable and financially beneficial for participants in comparison with alternative potential land use options. [RP23]

The details of the RBAP scheme (Action A.4) will be developed during Phase 1 in close co-operation with all associated beneficiaries and local stakeholders. It is anticipated that the RBAP scheme will be based on the principle of income foregone by the landowners for the implementation of measures on their holding. There are currently a number of similar models in operation in Ireland, where the project is managed by a project team and payments are made directly to farmers by the Department of Agriculture, Food and Marine (DAFM). For this LIFE IP, the exact details of the administration of the payments has yet to be developed however it is expected that payments to landowners will be managed by DAFM, based upon information on individual landowners, the measures they have implemented, and the expected improvements in water quality resulting from those measures. A comprehensive scoring system to assess the current farming practices, land use potential and potential income foregone for implementing measures, and taking account of the water quality improvements, will be developed by the project team (using external expertise as required) and approved by the project Steering Committee. This scoring system will be directly linked to the payments to farmers participating in the RBAP scheme.

Reasons why this action is necessary:

This action is required for effective roll out and ongoing implementation of measures and, to provide sufficient project oversight of the measures programme and ensure compliance with the agreed implementation plans.

Constraints and assumptions:

The precise detail of the concrete actions will require delivery of action A.8. In some cases landowners may need to recruit contractors to carry out works. Due diligence will be exercised to ensure that contractors have adequate experience to complete the works in hand and have any necessary insurances in place.

Expected results (quantitative information when possible):

An extensive programme of measures will be implemented in specified priority areas in HS catchments. It is estimated that measures will be implemented across some 25,000 ha of farmland (including 3,000 ha in commonage), and 15,000 hectares of privately and publicly owned forestry land.

These measures are expected to improve resilience to flooding affecting over 200 inhabitants. They will result in habitat improvements or restoration in approximately 780 ha

of blanket bog and a consequent improvement in conservation status. Water quality improvements are anticipated in some 70% of waters by volume discharged. The area under sustainable forest management is expected to increase by 1,265 ha.

Landowners will co-design and agree the programme and retain a large degree of ownership of the actions being undertaken. The action will result in environmental changes that are supportive of HS waters and will help to achieve a paradigm shift in catchment management that will foster local community custodianship of such sites and long term behavioural and attitudinal change.

Deliverables:

The action will deliver an effective measures programme within 5 demonstration catchments. A limited number of measures may be implemented in the control catchment depending on the findings of actions C.1, C.2 and C.3. Monitoring the implementation and performance of measures will afford learning in relation to measures effectiveness and acceptability and any unforeseen consequences. Such learning will inform adaptive responses and revisions to the programme that can be included in future programmes beyond the project demonstration catchments.

Milestones:

- Roll out of programme of measures by 01/10/22.

ACTION C.8: name of the action

C.8: Landuser support for measures implementation in demonstration catchments

Beneficiary responsible for implementation:

DHPLG, Local Authorities, Leader/Local Development Partnerships

Description (what, how, where and when):

A key element to this project is the need for significant and real community engagement at all levels within the project areas. This engagement not only includes farmers participating within the locally led agri-environment measures (Action C7), but critically, those who for whatever reason will not, or cannot, participate in the results based payment approach of the scheme. In addition, certain measures such as invasive species removal, require a systematic approach taking in all landowners, irrespective of whether they are actively farming or not. Furthermore, some pressures may require mitigation at resource or spatial scales beyond individual holdings. The wider community also needs to be engaged with a bottom up approach that develops a common understanding of "High Status" and its relevance to their particular community. Therefore Local Development Partnerships who administer the Social Inclusion programmes, and in their capacity as a project associated beneficiary, will provide support in non-participating landuser areas, and to community groups for measures implementation in demonstration catchments where the requirement has been identified in investigations (Actions C1 to C.3).

Local Development Partnerships will allocate personnel from participants in the Rural Social Scheme and Tús to undertake:

- measures implementation support at holding/farm level in "non-participating" areas where the project has identified a high-priority for such measures;
- thematic measures in areas requiring systematic attention throughout the catchments (for example alien species programmes) or to benefit clusters of landowners (for example hydromorphology mitigations) where capacity for such works is not available or is very limited;
- encourage wider engagement and support for the project within the catchments.

These measures will be additional to RBAPS actions and will complement action C.7. They will both increase the area within which measures are achieved on individual land-holdings and largely address cross-catchment and multiple landowner issues that are found to have cumulative impacts on HS waters (Action C.2) and cannot be adequately addressed by single individual landowners.

This significant involvement of Rural Development Companies (RDC) provides for an integrated approach (joined up) in non-participants, those who need extra assistance, the wider community underpinned by the Leader/RDC network and so ties in the learnings to the wider RDC network and importantly LEADER itself. This approach has emerged from projects such as the Duhallow Farming for the BlueDot EIP and the learnings from SAMOK 09 LIFE/DuhallowLIFE. The funding and associated resource commitment is significant equating to five staff in each of the demonstration catchments to ensure better uptake/awareness of the measures and project at local level.

Based on the distribution of High Status water bodies, ten LEADER/local development companies have identified secured funding to support work using personnel with hard and soft skills located within the demonstration catchments.

The nature of the works allocated will match the available skill sets of local work crews and will depend on project objectives in the local target area. Where required "hard skill" works will include blocking of drains and maintenance of installed structures; silt trapping and

maintenance of installed structures; propagation of trees of local provenance; native tree planting and felling of trees/shrubs that are causing impacts; installation of natural water retention structures and their maintenance; installation of fencing; control of invasive alien species.

Should the appropriate “soft skill” sets be available within the local Rural Development Scheme personnel the possibility of support for delivering elements of the community engagement programmes will also be considered. This could include clerical/administrative support for the local catchment teams.

Since participants are local community members (and some may also be part-time farmers) they have the trust of landowners and can greatly facilitate access to lands and completion of essential works that might otherwise prove difficult to achieve. They will also bring considerable local knowledge and experience to this action. On-site training and supervision of works will be provided through the Waters of Life local catchment teams who will also certify completion of measures installation.

The Local Development Partnerships are part of a much larger network of Local Development Companies and the learnings from the project will be transferable across the network, which administers a wide range of social inclusion programmes as well as the LEADER programme. The complementarity of this approach is self-evident, as within the LEADER programme under the Rural Environment sub-Themes (Protection and Sustainable Use of Water Resources and Protection and Improvement of Local Biodiversity), there are synergies to be achieved through this collaboration (e.g., supporting document from Kilkenny LEADER Partnership and South Kerry Development Partnership).

The Local Development Partnerships have been working closely with the LAWPRO to address issues affecting local community engagement within the environment element of the LEADER programme, in particular in ecologically sensitive areas (e.g., Natura 2000 sites) many of which overlap High Status areas. This has resulted in a recent change in the LEADER operating rules in Ireland (20/06/18) to facilitate greater access by community groups to the programme in Ireland for projects in protected areas (e.g., Natura 2000 sites). The above approach will bring about a further strengthening of this approach at the operational level, leveraging the local connectivity, ‘buy-in’ and rural skills within the Local Development Partnerships.

Action C.8 will continue throughout the Waters of Life measures implementation phase and will run in parallel with Action C.7. Comprehensive monitoring programmes will be put in place to evaluate measures performance and environmental responses (D.1).

Reasons why this action is necessary:

The implementation of individual small-scale measures on large geographical scales is key to protection and restoration of HS waters and mitigating cumulative impacts. In addition some measures are necessary which go beyond the ability of an individual landowner to implement. Action C.8 is essential to achieving this and is required to fill the resource and capacity gap for measures implementation that is a feature of HS catchment areas. The local population in HS catchments is generally sparse and declining. This is compounded by the fact that measures are required in remote areas with difficult access. Such works are labour intensive and not commercially attractive for contractors. Locally sourced support for implementing measures brings detailed local knowledge and familiarity with local issues to the project.

Constraints and assumptions:

Adequate supervision and training will be put in place to ensure that measures are implemented in line with best practice requirements. The range of skill sets available locally will determine the detail of support provided through this action. However, many of the works required are in line with the skills and experience of people generally participating in the Rural Development Scheme.

Expected results (quantitative information when possible):

A programme of measures implementation will be delivered to address catchment-wide cumulative pressures in 5 demonstration catchments over an approximate area of 600 km^2. Significant resources equating to five staff in each of the demonstration catchments will be committed to ensure better uptake/awareness of the measures and project at local level, and to support local landusers in instances where capacity is not available to carry out the necessary works. This will provide a cost effective solution to measures implementation for protection and restoration of HS waters and will secure buy-in and foster a sense of custodianship amongst local communities that is fundamental to the long-term protection of such sites.

Measures implemented are expected to result in reduction of established invasive species colonies by approximately 1 population per ha of riverine corridors.

The Action will result in creation of 25 FTE jobs in the demonstration HS Catchments.

Deliverables:

The action will deliver an effective local measures programme for individual and cumulative pressures within 5 demonstration catchments. Implementation of measures by locally based community members will generate a sense of community custodianship of HS waters and reinforce the inherent value of such areas. It will address a resource gap in remote and sparsely populated catchments.

Milestones:

- Rural Development Scheme Measures Support Teams established by 01/10/2022

D. Monitoring of the impact of the project actions (obligatory)

For each action or set of actions specify the following:

ACTION D.1: name of the action

D.1: Establish environmental monitoring programme

Beneficiary responsible for implementation:

DHPLG, Local Authorities, EPA, Teagasc

Description (what, how, where and when):

This project aims to manage landscapes and environment in the catchments of HS waters to ensure that conditions are conducive to restoring and supporting HS sites. A bespoke programme of integrated targeted measures will operate in demonstration catchments that will seek to maintain the environmental status quo where HS sites are not at risk, or to favourably alter conditions where HS is at risk or needs to be restored. In order to detect whether any changes are effected it is necessary to put a well designed, monitoring programme in place.

The precise parameters and metrics for monitoring will be determined during characterisation of HS catchments (A.1) which will deliver a report on Metrics for use in Determining Ecosystem Changes Relevant to HS, and during preparation of the framework of measures (A.2). Monitoring will include measuring physico-chemical environmental attributes to determine efficiency and extent of measures-induced changes in status actors. It will also include metrics intended to detect ecosystem responses in receptors that are drivers of status assessment. It may relate to vegetation composition and structure, invertebrate and fish community composition, assessment of habitat and soil condition, hydrological status, and indicators of climate change. Monitoring will be designed to detect within class shifts in water body status and will also record changes in natural assets during the life time of the project.

The precise location of monitoring stations will be determined during catchment investigations and preparation of catchment strategic management plans (C.1, C.2 and C.3) and in particular during preparation of implementation plans (C.6). Frequency of sampling will be set out in the monitoring programme and a range of monitoring techniques will be used. In some instances high temporal resolution data may be required and monitoring may consist of continuous measurement using deployed recording devices e.g. temperature and hydrometric gauges. In other situations periodic grab samples will be taken for analysis e.g. water chemistry, or parameters will be assessed in-situ during field visits e.g. vegetation or macroinvertebrate composition, or groundwater levels. Fixed-point photography may be used to monitor gross changes in vegetation structure and composition at landscape scales. In some instances it may be possible to undertake remote monitoring of parameters using aerial imagery or earth observation data.

Hydrometric monitoring may require the installation of control weirs/flumes to accurately measure the range of low to high flows, whilst the locations are to be determined in phase 1 an allowance for five installations has been budgeted within the overall monitoring programme.

Design of the monitoring programme will commence during completion of the demonstration catchment selection process and be completed within nine months. The EPA, the agency charged with River Basin Management Plan monitoring in Ireland, will assist in the design of the programme with the locally based catchment teams and other relevant project beneficiaries. EPA will fund a research project to an academic institution to undertake biological and hydrological monitoring of the catchments during the project in line with the

programme developed. Allowance for associated monitoring/research staffing has been included in Phases 1 and 2 of the project.

A framework for monitoring the project Key Performance Indicators throughout the duration of the project will be established. The initial situation from which the project starts will be assessed (baseline) and progress will be regularly evaluated against it. Baseline monitoring and/or data collection will be initiated within Phase 1, and as early as practicable within the programme. Monitoring of the project impacts and effects will take place throughout the project and its results will be evaluated on a regular basis. This monitoring will allow the impact of the project on the implementation of the RBMP to be assessed and allow quantification of progress achieved. In monitoring the project's contribution to the implementation of the RBMP particular attention will be paid to the monitoring of the capacity building impacts of the project; and the impact on mobilisation of and coordination with complementary funds used to support implementation of the RBMP, including the After LIFE period. The socio-economic impact of the project actions will be assess in Action D.3.

Reasons why this action is necessary:

It is not possible to determine the impact of the measures programmes without adequate monitoring of key determinands. The monitoring will inform adaptive project management and allow early detection of system responses and identify any changes required to the measures programme. Monitoring within the control catchment will allow detection of changes unrelated to the implementation of measures and due to any landscape or landuse changes during the lifetime of the project e.g. due to climate change or development.

Constraints and assumptions:

Catchments of HS waters are often remote and difficult to access. Monitoring programmes rely heavily on physical sampling at HS sites. Accessing remote sites requires application of significant resources, particularly monitoring personnel time commitments, and is a major constraint on their monitoring. Project beneficiaries will provide sufficient resource to carry out effective monitoring at the frequencies required and set out in monitoring programmes and will use remote sensing and data recording as appropriate.

Expected results (quantitative information when possible):

Monitoring will provide a comprehensive dataset typifying baseline conditions for a range of key parameters at HS sites. Data time series will allow tracking of system changes, and direction and speed of response.

The monitoring data will demonstrate the feasibility of detecting within class shift in HS waters based on specific parameters. Currently employed state change assessment systems do not easily detect such shift. Detecting within class shift is an essential tool for early intervention to protect pristine sites and where national focus is aimed at within class restoration for HS waters.

Such information will inform management decisions for all HS sites nationally and support formulation of national policy and future design of support intervention schemes in relation to HS sites.

The number and location of the monitoring sites will vary greatly depending on the scale and nature of the catchments selected for the project. They will be determined during the catchment assessment stage and the preparation of catchment strategic management plans. Depending upon the number of waterbodies in each catchment, it is anticipated that somewhere between 5 and 15 monitoring sites will be required in each catchment to build a representative baseline and provide accurate data for subsequent assessment of the effectiveness of the measures.

Deliverables:

The action will deliver a fit for purpose monitoring programme to detect the impacts of measures being implemented to protect or restore HS waters and within class drift in status. It will inform future policy in relation to such sites and the design of intervention schemes intended to support their protection.

Milestones:

- HS Catchments Monitoring Programme established by 1/09/2022.

ACTION D.2: name of the action

D.2: Ongoing environmental/status monitoring and progress reporting

Beneficiary responsible for implementation:

DHPLG, EPA, Local Authorities, Coillte, DAFM FS

Description (what, how, where and when):

Monitoring will be undertaken via the Research Project funded by the EPA in relation to the biological and hydrological monitoring with the support of locally based catchment teams. Where the project monitoring sites overlap with existing EPA monitoring sites it will provide the resulting data back to the project team. All monitoring and analysis will comply with best practice and have adequate quality assurance procedures in place. Significant resources will be deployed to site visitation and obtaining samples. It is important therefore that samplers have adequate training and that quality assurance procedures are complied with to ensure validity of results.

Where samples are returned for laboratory analysis the project will ensure that analytical methods are adequately controlled and that limits of detection and precision of methods are capable of detecting environmental levels of the determinant in question and resolving the levels of change anticipated over the project duration.

A detailed action plan for environmental/status monitoring and progress reporting will be developed for Action D.2 to be delivered at the beginning of the action.

Monitoring will commence approximately 6 months before measures implementation to provide baseline data against which change can be gauged. The frequency of sampling will be set out in the monitoring programme for individual parameters.

All monitoring data and results will be returned to the project team and retained in a secure data archive. A summary monitoring report will issue to the Project Management Group at quarterly intervals and will provide initial data interpretation and trend analysis. Where monitoring suggests that measures are having unforeseen or negative impacts this will be investigated and remedial action proposed.

An annual summary report will be prepared and will include a review all project data to date including RBAPS scores for the results outputs assessments. Preparation of all reports will be the responsibility of the Project Manager who will be supported by the core project team as necessary.

Reasons why this action is necessary:

Monitoring is essential for determining the effectiveness of measures and whether the project is progressing towards its objectives. It is also essential that a comprehensive data set is acquired to inform future national policy and design of management programmes or intervention schemes.

Constraints and assumptions:

Implementation of the monitoring programme requires application of sufficient resources with appropriate specialist expertise. This will be provided by project beneficiaries, with the EPA funding a research project that will undertake the biological and hydrology monitoring. The monitoring programme will also be supported by locally based project catchment teams to maximise efficiency of available resources.

Expected results (quantitative information when possible):

Monitoring will determine the effectiveness of measures implementation and extent of ecosystem responses. It will identify any deficiencies in measures implementation or unforeseen effects and guide adaptive project management. The data acquired during monitoring will provide a valuable national resource for informing future policy and developing

management intervention schemes. It is anticipated that monitoring will be required at between 5 and 15 monitoring sites in each catchment to build a representative baseline and provide accurate data for subsequent assessment of the effectiveness of the measures.

Deliverables:

This action will deliver an extensive dataset relating to implementation of measures in HS catchments and an assessment of their efficacy in supporting HS. It will also provide baseline data for the demonstration catchments.

Milestones:

- HS Catchments Monitoring Programme and Reporting implementation by 31/12/2026.
- Commencement of monitoring programme within 3 months of final selection of demonstration catchments
- Quarterly Monitoring Reports throughout the monitoring programme
- Annual Monitoring Reports throughout the monitoring programme.

ACTION D.3: name of the action

D.3: Generate community custodianship of HS sites

Beneficiary responsible for implementation:

DHPLG, Teagasc, Local Authorities

Description (what, how, where and when):

While this project will demonstrate approaches and actions to protecting and restoring HS sites, the long term protection of such areas lies in the hands of local communities. A top-down regulatory approach cannot deliver the level of support and protection required, such is the scale of activity that can have significant impact. Any programme must be owned, led and shaped by the local community. Therefore a central objective of this project is to engage the local community in the protection of HS sites.

To commit to such an undertaking, a process where the community comes to appreciate the presence and values of HS waters in their areas must take place. Communities must be facilitated and empowered to appreciate the pressures on HS waters and their own roles in creating pressures (as well as solutions). Further, they must be facilitated to use their own and external knowledge and methods to co-create with other actors strategies to reduce pressures in the long term.

This project addresses all these issues by working with communities to engage in awareness raising and facilitating local landowners and other actors to co-design measures and their implementation, and networking them with support systems available to sustain their efforts. Through such actions the project aspires to inculcate a sense of custodianship – in the farming and wider community - that will secure the long-term protection of HS waters through sustainable land use in sensitive HS catchments.

Assessing the success of the project in generating this sense of custodianship that should be sustainable in the long term, this project includes a research component constituted of an action research cycle. The cycle begins with engaging members of the community and proceeds to employ appropriate facilitation tools to support community members to engage in different types of action (as shown in Figure 6 below). The process will be tracked and analysed over time, identifying changes and learnings arising. A final stage will involve analysing the final scenario of the project where community custodianship is concerned, assessing achievements and shortcomings of the approach employed in the project and, importantly, identifying critical future actions for supporting long term sustainability of project outcomes. A roadmap will be generated for the replication of the approach employed by the project in other areas nationally.

Figure 6: Multi Actor Work in Horizon 2020

To measure such change in attitudes and behaviour the project will undertake surveys of the local communities and project participants in each of the HS catchments selected. The surveys will address a range of socio-economic issues including awareness and attitudes to HS waters, non-monetary value placed on such sites, community opinion on practicality and acceptability of methods and actions used to protect them, economic implications and social impacts relating to management and land use changes.

The surveys will make use of structured questionnaires, and will also entail interviews to secure the maximum participation across all social categories. One set of surveys will be completed in the early phase of the project when demonstration catchments have been selected, and a second set will be repeated in the final year of the project to provide comparison and gauge any changes.

A detailed action plan to generate community custodianship of HS sites will be developed for Action D.3 to be delivered at the beginning of the action.

Teagasc will support this work by providing the necessary research (social science) expertise, supervising a PhD Walsh Fellow. The research team will be supported by the locally based catchment management teams.

Reasons why this action is necessary:

Given that protection of HS sites is dependent on local community custodianship, it is imperative that genuine engagement with local attitudes is made and that the impact of this project, and the potential to replicate the approach nationally, is assessed.

Constraints and assumptions:

The research design will rely on collaboration between the social science expert and project personnel. Participation in the research and action process will be encouraged during initial community engagement (A.5) and facilitated by ethnographic recording of the community facilitation process.

Expected results (quantitative information when possible):

The action will provide an assessment of how community engagement and action may be facilitated to inculcate custodianship in 5 demonstration catchments. This information is vital to the formulation of national policy in relation to protection and restoration of HS waters and the design of any future land management interventions.

Deliverables:

This action will deliver a comprehensive report on the process of community engagement and inculcation of custodianship of HS waters. A pathway for similar processes nationally will be generated.

Milestones:

- Assessment of the process of community engagement and inculcation of custodianship of HS waters delivered by 31/12/2026.
- Design of community engagement/facilitation/co-design method within 3 months of selection of demonstration catchments
- Carrying out of 1st cycle within 8 months of selection of demonstration catchments
- Report on 1st cycle within 9 months of selection of demonstration catchments
- Carrying out of 2nd cycle in 6 HS catchments in final year of the project
- Summary report on action research and recommendations based on lessons learned.

E. Public awareness and dissemination of results (obligatory)

For each action or set of actions specify the following:

ACTION E.1:

E.1: Create project identity

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

Establishing a strong identity for the Waters of LIFE project is important in ensuring project representation is consistent and the main goals are clear to all those linked within the project. An identity makes the project recognisable amongst target audiences, improving visibility and awareness. The target audience for this project will be internal and external stakeholders, policy makers and professional experts but the main audience will involve outreach, on a national scale, to the general public. It is therefore important to develop a strong visual identity and the following methods will be used to achieve this;

- Waters of LIFE Website

Please see Action E.2 for detailed information.

- Waters of LIFE Logo

A logo will be developed and will represent the face of the Waters of LIFE project. This well-designed logo will promote the projects objectives and will be a symbol to communicate the core values of the project, quality and professionalism. The logo will appear on all communication tools including marketing materials, email signatures, social media coverage, reports and presentations uniting all stakeholders under the Waters of LIFE project;

- Template

A specific Waters of LIFE template will be developed for emails signatures, presentations and reports. The logo will appear on all templates to ensure its continued use and place emphasis on the project identity. A template will help to keep the dissemination of project information clear with a consistent layout and format.

- Banner

To increase visibility of the Waters of LIFE project at events, banners will be produced and placed in locations such as registration areas, break out areas or behind speakers' podiums. The banners will contain project information, objectives, activities and contact information including website address and social media contacts. Each banner will contain the Waters of LIFE and EU Life project logo. Four banners will be produced in total and information will be in both English and Irish.

- Project promotional gifts

As the core principle of the project is ultimately environmental protection and restoration, the mass production of the "typical" throw away goodies will not be used. A limited number of environmentally friendly products targeted at the communities of HS catchments will be utilised instead over the lifetime of the project. These will form thank-you items, prizes and 'goodie give away' at meetings and conferences. All will include the Waters of LIFE logo and website to increase the range of project recognition with the aim of generating traffic to the project website. Items will all display the project logo and will include;

- Eco water bottles
- Penknives
- Printed High Viz vests

- LED torches / Head lamps
- Reflective dog collars.

The Waters of life core project team will procure the goods and services required to deliver the actions above.

It is anticipated that assistance in developing a project identity (logo, template, banner, promotional gifts) would be provided by means of contracted design consultants. Building the identity of the project is considered a key element for enhancing the levels of engagement and trust with landowners and public within the pilot catchments. As the project progresses and interim results indicate positive outcomes, the link between these positive results and the project will need to be strengthened and 'brand' awareness built up outside the catchments. The cost estimate is based on recent experience of project beneficiaries who have operated similar projects, and the Local Authorities Water Programme who have used project identity as a key tool in implementing the RBMP engagement strategy, and as such is considered to be reasonable.

Reasons why this action is necessary:

Mobilise interest and awareness of Ireland's unique standing in Europe regarding HS waterbodies.
Promote the value of HS catchments and benefits that these areas provide to communities.

Constraints and assumptions:

The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply.

Expected results (quantitative information when possible):

- A recognisable project with its own identity;
- Increase national awareness of the value of HS waters; and
- Increase international awareness of Ireland's unique place in Europe holding a large proportion of these water bodies.

Deliverables:

Logo created
Templates created
Social media platform(s) established
Promotional gifts ordered with project logo

Milestones:

- Logo created – 6 months
- Templates created - 6 months
- Social media platform(s) established - 6 months
- Promotional gifts ordered with project logo - 6 months
- Project identity established by 1/09/2020.

ACTION E.2:

E.2: Website setup for the Waters of LIFE Project

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

An open, easy to use and appealing website is essential to the identification of the Waters of LIFE project. The website will act as one of the main channels of communication regarding the project. The target audience will primarily be the communities living and working in the area of the catchments but also the wider general public as well as internal and external stakeholders. Tools, and the complexity of information available on the website, will be adapted according to who the target audience is to ensure effective communication.

A professional website designer will be employed to develop the website, and this will be supported by the Waters of Life Project Administrator who will manage and oversee all communications with all project team members contributing to the development of content. The website will be operational within 6 months of project commencement and the Project Administrator will be responsible for the maintenance once set up. The website will be updated regularly throughout the project and for at least five years after the lifetime of the project. It is envisaged that the domain 'owner' post project will be local authorities, under the auspices of Local Authorities Water Programme team (LAWPro) which will be considered in the site's architecture in order to facilitate switch over and longevity of the materials.

The content of the website will evolve, from initially detailing the objectives and purpose of the Waters of LIFE project, to providing information on the programme work plans for the demonstration catchments, progress updates, and ultimately results reporting. The main content of the website will include;

- Full Waters of LIFE project details, objectives and contacts;
- Core teams, stakeholders and contact information;
- Resource and reports section including information about HS water bodies, technical reports, outputs and links to further information and publications;.
- News, events and media which will inform browsers about workshops in their local area or current news relating to the project. The E-zine and project brochure will also be presented here; and
- Schools section which will contain school work packages and information relating to the Schools programme (Action E.7).

Reasons why this action is necessary:

The national promotion of the Waters of LIFE project is important in raising awareness regarding the importance of HS waterbodies and understanding their significant decline nationally. Fostering a positive attitude towards the protection and restoration of these waterbodies is vital to the successful implementation and community acceptance of Best Practice Measures. The work of the Waters of LIFE project will also be of considerable interest to stakeholders both within Ireland and abroad with the website providing the main platform for information distribution.

Constraints and assumptions:

The procurement of external technical support by the Waters of Life project will be subject to Public Procurement Guidelines and minimum statutory timelines for procurement phases will apply.

Expected results (quantitative information when possible):

This action will deliver

- A professional well-designed project website;
- Promotion of the importance of HS waterbodies;
- Improved public awareness regarding HS waterbodies and reasons for decline;
- Dissemination of project results and findings; and
- Continued hosting by LAWPro of the website for a least 5 years after project completion.

Deliverables:

Waters of LIFE website launch

Milestones:

- Waters of LIFE website established by 1/09/2020.
- After life website maintenance arranged – 82 months.

ACTION E.3:

E.3: Promotion of HS water bodies and their protection using promotional materials and media

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

Promoting the importance of HS water bodies is a core element of the Waters of LIFE project. This is integrally linked to project acceptance and buy-in by stakeholders and engagement by local communities. Therefore this action will support actions to create a project identity (E.1), and to promote the project and the benefits of protecting HS waters through community meetings and schools' visits (E.6 and E.7). The promotional campaign to be delivered by this action will aim to develop a greater national awareness of HS water bodies and the need for their protection. It will enhance the development of a sense of custodianship towards these water bodies among local communities. All Project Team members will contribute to media campaigns throughout the life time of the project, providing the necessary technical and scientific input where required.

HS waterbodies occur in a range of landscape types in Ireland (e.g. agricultural, forestry, peatlands) and therefore it is envisaged that multiple beneficiaries will contribute to this action, each of whom will have specialist knowledge of these land uses and landscape types.

Building upon the creation of a strong visual identity using the tools in Action E.1, the dissemination of information and promotion of the HS waterbodies will be developed through the following methods;

- E-newsletters

Electronic newsletters provide multiple benefits over hard copy newsletters including cost efficiency and reaching a wider subscriber market both nationally and internationally. Using software such as Mail Chimp, specific engagement statistics can be generated to tailor future newsletters. Electronic newsletters can be interactive providing links to further information or videos. It is envisaged that interested parties can subscribe at local community workshops (Action E.6) or via the dedicated Waters of LIFE website (Action E.2). Once subscribed, users will receive a welcome email and bi- annual (spring/summer, autumn/winter) updates regarding the Waters of LIFE project, its progress and activities, interviews with key project staff and members of local communities, and relevant water quality information. An important component will be that local communities have the opportunity to contribute content to the newsletter and share their experiences of being involved with Waters of LIFE and what HS water bodies mean to them. All newsletters will also be available on the website for those who do not wish to subscribe to e-circulations. A small batch of hardcopies of the Waters of Life newsletter will be distributed at local community meetings.

Articles regarding the Waters of LIFE project and progress will also be published in the Catchments newsletter. This is an existing newsletter run by the Environmental Protection Agency Catchments Unit which publishes articles sharing catchment management stories and science. This newsletter has an established readership interested in catchment management which the Waters of LIFE project can access. At least one article will be submitted to the Catchments newsletter per year for the lifetime of the project. A small batch of the Catchments newsletters will also be made available and distributed at local community meetings.

- Television documentary

The Waters of Life project will develop a documentary suitable for airing on Irish TV. Long-running series such as Eco-eye and Ear to the Ground regularly feature topics such as water quality, climate change, natural capital, pioneering research and community action in the fields of ecology and conservation. Filmed all across the country these series reveal the

challenges that our native flora and fauna face today. It is proposed that a 'Waters of Life' episode will be developed for airing on one of these series. The episode will be developed and filmed in a sponsored partnership arrangement with the series producers. The documentary will be ready for airing in Year 4 when best practice measures have been collated, and implementation within the demonstration catchments has commenced. The episode will focus on the importance of pristine water quality in Ireland, the issues we are currently facing and the aim of the Waters of LIFE project working in tandem with its stakeholders and the general public.

- Notice boards and signage

Notice boards will be prepared by the Waters of Life project team and erected at strategic locations within the pilot demonstration catchments. Temporary signage will be placed at every location selected for best practice measure implementation. To ensure continued communication regarding the value of HS waters, permanent notice boards will be erected in high visibility locations where best practice measures have been implemented and that are accessible and utilised by the public. The signage and notice boards will increase the visual presence of the Waters of LIFE project both during the lifetime of the project and into the future. Each notice board will contain the following;

- EU Life logo;
- Waters of LIFE Logo;
- Natura 2000 network logo, if required;
- Website address;
- Beneficiaries;
- Local biodiversity in the area, highlighting those that benefit from pristine water quality;
- Brief summary of the Waters of LIFE Project; and
- Information on the work conducted in the area.

- Project brochures

The main channel for project communication will be via the website and media as well as direct communications via the Schools Programme and community workshops. A limited number of printed leaflets will be produced to provide information regarding the Waters of LIFE project. The brochures will be presented in plain English and Irish and will also generate traffic to the website. The brochure will also be available in PDF format on the project website.

- Radio

Ireland has a large radio listenership with over 80% of Irish adults listening to the radio every day. The radio is an important news medium for the Irish population and the Waters of LIFE project will utilise radio to maximise outreach and publicise events. Community events will be announced on local radio stations and this will involve a description of the Water of LIFE project and contact information. Local radio stations also have Community Diary's where local events can be advertised for free on the station's website.

- Print newspaper articles

Local newspapers are also hugely important in distributing information amongst communities. Waters of Life project events will be advertised in local newspapers in the catchment areas concerned.

- Social Media

Social media is an important communication, networking and marketing tool and will be used by the Waters of Life project team to provide up-to-date information relating to ongoing project work and results. Platforms such as Twitter, Facebook, Instagram, and Pinterest will be explored by the project team and the most appropriate platform(s) will be chosen. The Project Administrator will be the principal source of project media communications and maintenance of social media sites and to ensure interaction is not sporadic but consistent throughout the project life time.

- Drone technology

The use of drones has become an ever increasing scientific tool. While drone footage will be mainly used to assist in investigative assessments and applying the correct measures in the correct place (see Action C.1) it will also be used in the Waters of Life project to highlight landscape features and connections they form with local communities. Short video footage will be used to deliver powerful messages to viewers and communities on the importance of HS water bodies in their area, the eco-system services they provide and how they can be degraded. This drone video footage will be inserted into presentations and used at local community meetings (Action E.6) and schools programmes (Action E.7).

Reasons why this action is necessary:

The mobilisation of interest and public awareness of Ireland's unique standing in Europe regarding HS waterbodies is essential in order to implement action E.5 and facilitate the delivery of actions C.1 to C.7. The promotion of the value of HS waterbodies and benefits that these areas provide to communities will be core to engendering a sense of community custodianship and the long-term protection and restoration of these waterbodies.

Constraints and assumptions:

The selection of demonstration catchments will form part of the Waters of Life project (action A.3). As catchment selection proceeds greater detail will emerge in relation to this action and the specifics of best media and promotional materials to be used.

Expected results (quantitative information when possible):

The expected results from this action includes the following;

- High quality informative E-newsletter delivered twice per year;
- Television documentary about HS water bodies in Ireland and the work that Waters of Life Project is doing to protect and restore these waters; and
- Media campaign informing communities about events which will promote the importance of High status waters in their local area.

Through the above and also through actions E.2 and E.5 the Waters of Life project will increase national awareness of the importance of HS water bodies and also generate interest in their protection and restoration. It is anticipated that the various awareness raising actions of the project will impact 14,000 people (70% of the study area residents).

Deliverables:

Project brochures created
Spring/Summer and Autumn/Winter E-zines published
Television documentary filmed and aired
All temporary and permanent notice boards erected

Milestones

- Project brochures created – 12 months
- E-newsletter created - year end (Annually for 6 years)
- Television documentary completed – 48 months
- Temporary and permanent signage erected - year 4 to year 7
- Promotional material delivered by 31/12/2026.

ACTION E.4:

E.4: Networking with other projects, including LIFE projects

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

Much research and various demonstration projects of relevance to the protection of these waters is ongoing elsewhere in Europe and internationally. As part of this multi-disciplinary project, a database of all relevant projects in Europe will be collated and linkages will be established amongst a network of project personnel from different projects. Particular attention will be given to demonstration and best practice, and fundamental research projects that include the development of measures on farms and in forests in order to achieve high water quality and mitigate sediment, nutrients and hydromorphological impacts, as well as to attain high status protection. In addition to establishing a network of experts and exchanging findings, this activity will also link with and support the development of the framework of measures task (Action A.2).

There are number of specific projects (both LIFE and non-LIFE funded) within Ireland and Europe with objectives linked to the protection and restoration of water bodies, community engagement and/or biodiversity. The Waters of LIFE project will avail of the opportunity to collaborate and share experiences with all relevant projects. Some of the beneficiaries of the Waters of Life project are also represented on steering and management groups of some of these other projects in Ireland and this will facilitate networking. Contacts from all project beneficiaries and stakeholder representatives will be collated to support the successful networking of the Waters of Life project with other relevant projects - DHPLG, Local Authorities (including LAWPro – Local Authority Waters Programme), the EPA, DAFM, the Forest Service (FS-DAFM), the NPWS, the OPW, Teagasc (the Agriculture and Food Development Authority) and Coillte (the State Forestry Body), SKDP.

This action will be supported via on-line web searches, literature reviews, and by establishing personal and direct contact with other Irish, EU and other international projects. Subject to agreement, a list of links to these projects will be posted on the project website (Action E.2).

In relation to actions funded by complementary funds, liaison between co-ordinating beneficiaries from both projects will take place through the project steering groups and will enable co-ordination of actions funded from complementary funds. In addition, DCHG representation on the Blue Dot programme Steering Group will enhance the co-operation between the two projects. Close co-operation between the two project teams will be prioritised during Phase 1 of both projects to further maximise the co-ordination of actions funded from complementary funds.

The project will mobilise complementary funding from existing budget commitments of the DHPLG, DAFM and Irish Water. In relation to funds from the DHPLG, these funding streams remain within the complete control of the Co-ordinating Beneficiary, and the Co-ordinating Beneficiary with the support of the Project Steering Committee will ensure co-ordination for this purpose.

Project leaders / Project Beneficiaries from these other projects will be contacted in the start-up phase of the Waters of Life Project to incorporate their expertise and experiences in addressing the issues with respect to achieving protection of high status sites. Information generated over the course of the Waters of Life Project will be sent to other projects to ensure maximum uptake and impact, especially of the project findings, and to encourage their ongoing support and peer input. Communication across the network will also be maintained

with the relevant projects through the project newsletter (Action E.3), conference participation (Action E.8) and project networking/dissemination and reporting (Action E.4), as well as via email and conference calls, when required.

This action will establish lines of communication and direct links between the Project Team and other relevant projects.

The Waters of Life project team will assess potential projects of relevance in Ireland and Europe (e.g. Kerry LIFE, the Freshwater Pearl Mussel Project, The Living Bog, Duhallow LIFE, Raptor LIFE or CatchmentCARE, LIFE IP RBMP DUERO in Spain, LIFE IP RBMP-NWRBD in the UK and LIFE IP RICH WATERS in Sweden). Currently ongoing projects and recently completed ones projects will be reviewed. Although the focus will be on other LIFE funded projects, other projects with different funding resources will also be considered. A short report will be produced highlighting relevant projects and outlining their synergies and complementarity.

Representatives from these projects will be invited to the Waters of LIFE launch event (see Action E.5) with the aim of forming initial contacts, strengthening contacts already formed, and introducing the Waters of LIFE project to the wider community working on similar ventures. Representatives will also be invited to give a short presentation on their project and its objectives to the Waters of LIFE project team members. This will help to forge effective networks and identify the common areas of interest and potential for mutual learning.

Following the launch event, an informal network will be established with the other projects identified. Waters of Life project team members will visit at least four relevant projects in Ireland to witness the work being undertaken and harvest practical lessons in implementation. Funding will be allocated to allow two project members to visit a relevant European project identified within the report and see best practice approaches for protecting high quality sites and similar challenges in Europe. Networking with these European projects offers the Waters of Life project a valuable opportunity to highlight the significant proportion of HS waters remaining in Ireland to an international audience.

Representatives from Waters of LIFE will attend at least 10 other external national meetings/conferences throughout the life time of the project (e.g. Freshwater Biologists Meeting, EPA Waters Conference, CIEEM, National Biodiversity Conference or community led events). These events will offer a networking opportunity with external stakeholders, university students, the public and other ongoing projects within Ireland to further promote the work of the project and share information with a wider audience. Representatives will also attend one international conference (e.g. SIL, SEFS) offering the opportunity to bring the work of the Waters of LIFE project to an international audience and highlight the importance of HS water bodies in Ireland and Europe.

A provision is also made within this action to allow up to two visits by the Waters of Life Project Team to other relevant projects either in Ireland or elsewhere in Europe. The focus of such visits will be to observe and learn from the practical implementation of catchment based measures to control sediment and nutrient loss and mitigate hydromorphological impacts from farming and forestry. Lessons learnt will be incorporated into the design and implementation of the project concrete conservation actions, where applicable.

In addition, one international conference / workshop will be attended by both the Project Team Leader and Project Scientific Advisor during the lifetime of the project, at which two papers will be presented. The theme of the conference selected for attendance and

presentation of project findings will focus on catchment management, agri-environmental systems and forestry management.

Finally, representatives from other projects will be invited to attend the end of project conference (E.8). This conference will share knowledge gained through the Waters of Life project, discuss best practice approaches to protecting and restoring HS water and disseminate results.

Reasons why this action is necessary:

This action presents an excellent opportunity to promote the work of the Waters of LIFE project both nationally and internationally and also to share knowledge and expertise across projects. Established LIFE and/or other projects will offer invaluable experience across a range of disciplines and facilitate the exchange of ideas. In particular, the Waters of LIFE project will gather information on best practice methods to protect and restore HS water quality, learning from the hands-on practical experience of other projects and disseminating lessons learned among the wider community of stakeholders in similar undertakings.

This will assist in ensuring the successful implementation of the concrete High Status actions towards protecting and restoring the high ecological status in the selected demonstration catchments (and ultimately Ireland's wider network of high status sites). In so far as is possible, information from a range of relevant Irish and European projects has already been incorporated into this proposal and linkages established between the beneficiaries and those personnel from these projects.

Through ongoing communication with other projects, it will be possible to keep abreast of new developments that may benefit the practical implementation of the project and ensure the best available science is used and to achieve value for money. It is also hoped that close communication will help avoid common pitfalls, thus ensuring the successful delivery of the Waters of Life project.

It is expected that the development of a database and the establishment of an informal network of high status and other relevant projects will improve the effectiveness and efficiency of both the Waters of Life and the linked projects.

This action will also foster ongoing communication and information exchange throughout the duration of this project. The Project Team members' visit to relevant projects/conferences will inform the development and implementation of practical and efficient concrete conservation actions and, through direct contact, establish good working relationships with key researchers and maximise project synergies. Attendance at an international conference/workshop will facilitate the exchange of ideas and information, as well as promoting and disseminating the findings of this project.

Constraints and assumptions:

This activity will be undertaken by the core team members and therefore is dependent on the establishment task (Action F.1).

Given the strong support for the project across various governmental and non-governmental stakeholders it is assumed that these parties will be of significant benefit to the networking process.

Expected results (quantitative information when possible):

The expected results from this action will include:

- Development of a database of relevant projects,
- The establishment of an informal network of high status and other relevant projects in the EU,
- Up to two visits to relevant projects in the EU,
- Attendance at and presentation to a relevant international conference by two members of the Project Team,
- Internal reports on the lessons learnt from the site visits and international conference,
- Improved efficiency and effectiveness in the design and implementation of project concrete conservation actions.

Deliverables:

Database of relevant projects & synopsis of other relevant projects outlining their synergies and complementarity

At least four site visits to other projects

Milestones:

- This action will start in the early stages of the project and will continue for the duration of the project – 82 months
- Database of relevant projects – 12 months
- The project visits will take place in the first two years of the project – 24 months.
- Project networking rolled out and ongoing by 31/12/2026.

ACTION E.5:

E.5: Project launch event

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

The Waters of LIFE project will be officially launched at a formal event. The project team will be responsible for the organisation of the launch with support from the project beneficiaries. The launch will occur within the first six months of the project and coincide with the establishment of the project core team, project website and logo. The launch will introduce the Waters of LIFE project and present a significant opportunity to promote the project and establish a high profile. The launch will be attended by the Waters of LIFE project team, project beneficiaries and a wide spectrum of relevant stakeholders. As community engagement is a key aspect from the outset of the project, local community groups operating within HS catchments will be invited to attend. Representatives from other projects (Action E.4) will be invited to attend the project launch event. A portion of the day will be dedicated to presentations from these projects to establish links, disseminate information about Waters of LIFE and share knowledge between projects (as described in E.4).

Reasons why this action is necessary:

The launch event will represent the formal start of the Waters of LIFE project and its introduction to a wide spectrum of stakeholders and interested parties. It is considered necessary to inform stakeholders and local communities about the project and to make clear its objectives and actions.

Constraints and assumptions:

This action forms part of the suite of public participation actions and therefore interacts with their completion.

Expected results (quantitative information when possible):

The action will officially launch the Waters of LIFE Project and present a major opportunity to bring the project to the attention of a wide spectrum of stakeholders and parties interested in the environment.

Deliverables:

Project launch

Milestones

- Project launch event completed by 1/09/2020.

ACTION E.6:

E.6: Promote the project and the benefits of protecting HS waters through community meetings

Beneficiary responsible for implementation:
DHPLG, Local Authorities

Description (what, how, where and when):
Promoting the importance of HS waters and engendering a sense of custodianship amongst local communities is a core element of the Waters of LIFE project. Workshops will aim to raise awareness amongst communities living and working in the catchments of HS waters.

A detailed plan to promote the project and the benefits of protecting HS waters through community meetings will be delivered at the beginning of the task.

An initial meeting will allow communities to give their views on their local waters and discuss water quality, biodiversity, tourism value and ecosystem services that healthy waters can provide. The meeting will also allow the Waters of Life project team to impart information on the project and its objectives to the communities. Meetings will acknowledge the communities central role in protecting and restoring HS waters and seek their input in terms of local knowledge and experience of catchment activities and environmental issues. This will generate the required buy-in and foster an ethos of custodianship in these areas.

Community meetings will be facilitated by the Local Area Teams and supported by the Local Authority Waters Programme (LAWPro). The Waters of LIFE project will draw upon the experience of the local authorities, LAWPro Community Officers and Catchment Scientists who work closely with communities outside of this project. Workshops will offer the opportunity for communities to be involved in the co-design of locally focussed water quality protection measures and gain access to outreach programmes and environmental project funding. This will help further contribute to the protection of HS waters into the future.

Introductory meetings and follow up meetings will be completed in each of the five 'demonstration' catchments, equating to €69,647 per catchment. Given the likely size of each such catchment and the concomitant requirement for multiple introductory meetings per catchment, the estimated cost per meeting must include the costs of venue hire, audio-visual equipment hire (where applicable) and light refreshments for local community participants. The costs provided have been estimated based on the experiences of the Local Authorities Water Programme, which has undertaken several hundred such meetings as part of their engagement with stakeholders across the country. As such, the cost estimates are considered to be reasonable. A breakdown of costs is provided below in *Cost Estimation*.

Following the initial introductory meeting, further follow-up meetings will be held. These meetings will aim to focus on specific interest areas highlighted, inform communities of project progress and/or facilitate the meeting of interested sub-groups arising from the initial meeting. The size of the demonstration catchments and population density will determine the number of initial meetings required. However, it is anticipated that demonstration catchments selected will cover 100 to 150km^2. One initial meeting can cover communities in such an area however larger areas may require more than one meeting.

Reasons why this action is necessary:
The long-term protection and restoration of HS waters cannot be achieved without communities knowing or understanding the importance of such water bodies and subsequently providing their input into the design of measures that best suit their catchments. The community meetings will help to catalyse a sense of 'Pride of Place' and community custodianship of these HS water bodies. This will be an important part in achieving protection and restoration beyond the lifetime of the project.

Constraints and assumptions:

Part of the Waters of LIFE project will be the selection of demonstration catchments; therefore the exact areas community meetings will be focused is not currently known. The number of meetings required is estimated by calculating how many meetings would be required across an average sized catchment. Meeting organisers (Waters of Life locally based catchment teams) will be based in local office and therefore will not travel extended distances and this has been factored into the calculation.

Expected results (quantitative information when possible):

The expected outcome of this action includes;

- Increased awareness of HS waterbodies across communities within demonstration catchments reaching some 14,000 individuals;
- Awareness raised regarding the Waters of LIFE project and actions; and
- The project's local community contact introduced

At least 10 community meetings will be scheduled in the 5 pilot catchments. This figure is expected to be higher, depending on the level of engagement and the scale of any issues that may be identified. Once the development of ownership of the water bodies is built in to the communities, the need for facilitated meetings should be reduced.

Deliverables:

Introductory and follow up community meetings

Milestones

- Community meetings held by 31/12/2026.
- Introductory meetings completed in each demonstration area – months 24 to 82.

ACTION E.7:

E.7: Promote the project and the benefits of protecting HS waters through school visits

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

The Waters of LIFE project presents an opportunity to deliver an educational programme to the next generation of environmental custodians. The Waters of LIFE project will present an interesting, interactive and engaging programme to school children.

Visits will be focused within HS catchments and the demonstration sites involving up to 100 national schools. The visits will introduce school pupils to the water bodies in their local community and discuss the benefits clean waters can provide. An age appropriate lesson plan will be developed involving classroom activities and interactive lessons. It is envisaged that lessons will revolve around water quality and the biodiversity associated with pristine water quality. Where possible school visits may also include a field visit to a local water body. A school's programme will be developed within the first year of the project and rolled out throughout the life time of the project.

Reasons why this action is necessary:

A key objective of the Waters of LIFE project is to promote the importance of HS waters in Ireland and inculcate a sense of custodianship among local communities and this will also involve school pupils. A tailored programme for each visit will inform pupils about their local waters and help to engage pupils in water quality protection and restoration. A school's programme offers further opportunity to disseminate information across local communities about the Waters of LIFE project and the work it will be doing.

The school's programme will be a resource for future roll-out to HS catchments nationally.

Constraints and assumptions:

Part of the Waters of LIFE project will be the selection of demonstration catchments; therefore the areas that the schools visits will be focused on are currently unknown. Initially the programme will be focussed within communities who live in HS catchments. As the project progresses and demonstration catchments are selected, these areas will become the focus of this action. It is estimated that up to 100 national schools will be part of the Waters of LIFE schools' programme.

Expected results (quantitative information when possible):

This action will result in the;

- Development of a school's programme; and,
- Delivery of a school's programme.

Deliverables:

Schools programme developed
100 school visits completed within school term.

Milestones

- School programme developed – 12 months
- School visits held by 31/12/2026.

ACTION E.8:

E.8: End-of-project conference

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

On completion of the Waters of LIFE project it is important that the results are shared amongst the relevant stakeholders, communities and other interested parties.

An 'end of project' conference will be held. The aim of this conference is to disseminate project results to a wide spectrum of stakeholders. The project team will set out project findings through a series of presentations and an accompanying field trip to a demonstration catchment(s) will also be arranged to show best practice methodologies in place. The end of project conference presents an opportunity to further publicise the project. Representatives from other relevant projects will also be invited and the conference is an important opportunity to bring these representatives, beneficiaries and stakeholders together providing additional networking opportunities that can help instigate future initiatives.

The end-of-project conference will be a significant event in terms of an anticipated number of attendees. The estimated cost of this event will include the cost of venue hire, audio-visual equipment hire (where applicable), Travel and subsistence costs for speakers, light refreshments for attendees, and transport and associated costs to a 'demonstration' catchment. The cost estimate is based on experiences of project beneficiaries who have held conferences of a similar scale and as such is considered to be reasonable.

Reasons why this action is necessary:

This action will inform and promote project findings to stakeholders across Ireland. The dissemination of project results is hugely important to inform others of the best practice methodologies and to influence future policy in the area of HS water body protection and restoration. This provide a mechanism for stakeholders to take methodologies developed by the Waters of LIFE project and replicate the approaches recommended in other HS catchments in Ireland. To ensure that the Waters of Life project outputs are accessible results will be collated into a non-technical summary report and an end of project conference will be held. The conference is an opportunity to create an open discussion regarding the best practice methodologies developed and implemented.

The field trip to a demonstration site provides further opportunity to transfer project learning regarding best practice management interventions in HS catchments to stakeholders and ensure project legacy.

Constraints and assumptions:

No constraints or assumptions have been made for this action.

Expected results (quantitative information when possible):

- End of project conference; and
- Dissemination of project results.

Deliverables:

End of Project conference

Milestones

- End of Project conference held by 31/12/2026.

F. Project Management and monitoring of project progress (obligatory)

For each action or set of actions specify the following:

ACTION F.1:

F.1: Project Establishment

Beneficiary responsible for implementation:

DHPLG in consultation with all beneficiaries

Description (what, how, where and when):

The establishment (and longer term operation and management) of the Waters of Life Project will comprise of four essential components: i) the Co-ordinating Beneficiary, ii) the Project Management Group, iii) the Project Team, and iv) the Project Stakeholder Group.

The project management structure is summarised in the accompanying figure Waters of Life Organisation Chart (Figure 3) which provides details of the roles and responsibilities of persons and organisations involved. The provisional project team structure and its position in the project management structure are shown in Figure 7 below.

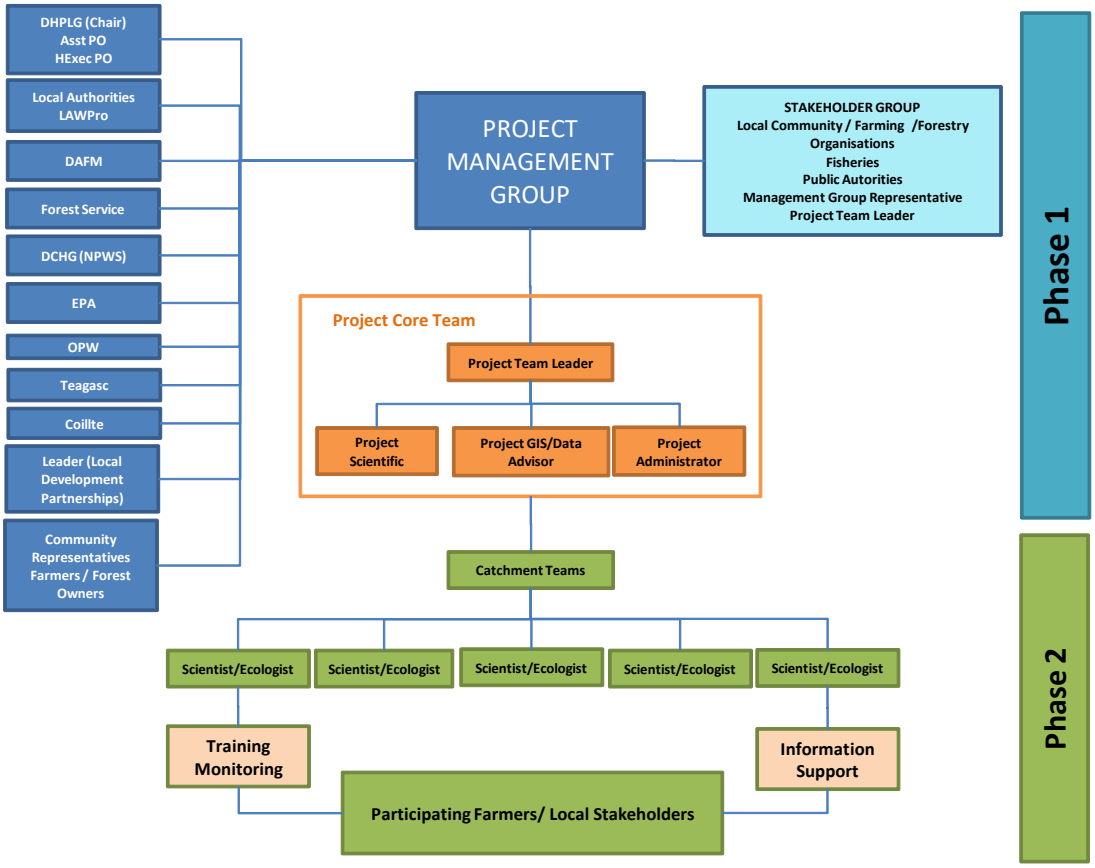


Figure 7: Organogram - Provisional project team structure

i) Co-ordinating Beneficiary: The Department of Housing, Planning and Local Government (DHPLG) will be the Coordinating Beneficiary, and will have overall responsibility, for the project. The DHPLG will provide two part-time administrative staff members (Assistant

Principal and Higher Executive Officer) to oversee project administration, as well as providing technical expertise toward steering the project. The Co-ordinating Beneficiary will administer the project funds on behalf of the Associated Beneficiaries. The DHPLG has extensive project management experience, including in LIFE-funded projects, and it is envisaged that this approach will streamline and reduce overall project administration and, thus, associated management overheads. DHPLG will also service supporting administrative processes required to underpin the technical work of the Associated Beneficiaries in implementing their respective Actions. DHPLG will procure and manage the contracts for the Project Team, and the Project Team Leader will report directly to the DHPLG regarding overall project operation and monitoring. DHPLG will also chair the Project Management Group and will report directly to the European Commission on technical and financial progress. Details of Project reporting are outlined in Actions F.4 & F.5.

ii) Project Management Group: The DHPLG, as Co-ordinating Beneficiary, with the eight Associated Beneficiaries - Local Authorities (including LAWPro – Local Authority Waters Programme), the EPA, DAFM, the Forest Service (FS-DAFM), the NPWS, the OPW, Teagasc (the Agriculture and Food Development Authority) and Coillte (the State Forestry Body) together with representatives of participating stakeholders for example farmers/forest owners, will make up the Project Management Group. Key staff members from all nine Beneficiaries have worked closely in the preparation of this project application and will meet to formally establish the Project Management Group immediately if this LIFE-IP funding application is successful. The Project Management Group will develop an overarching project plan and specify the requirements, tasks and deliverables for the procurement of the Project Team. The Project Management Group will manage the Project Team on an ongoing basis, in terms of project planning, implementation, management and monitoring. To that end, the Project Management Group will utilise a variety of staff members with key skill sets from each Beneficiary, as and when required. It is expected that there will be at least one Project Management Group meeting per year, the frequency and subject of Project Management Group meetings will be task driven. The Project Leader will report regularly to the Project Management Group, with other Project Team members reporting and attending meetings as and when required.

iii): Project Team: A dedicated, multi-disciplinary, four person core Waters of Life Project Team comprising a Project Team Leader, Project Scientific Advisor, Project GIS/data Advisor and Project Administrator will be appointed by the Co-ordinating Beneficiary for the duration of the project. Each of the Project core Team members will be full time (fixed-term temporary, whole-time contracts) with the exception of the Project Administrator, who will work half time. The core team will be based in a dedicated project office. Project Catchment Scientist/Ecologists will be engaged in the project on a regional basis at the phase 2 implementation stage within the selected catchments. The regional Catchment Scientist/Ecologists will be placed in offices in the selected demonstration catchments.

The role of each Project Team member is outlined below:

The **Project Team Leader** will lead the overall co-ordination of the project and management of the Project Team. The Project Team Leader will be the figurehead and public face of the project. They will have strong communication, negotiating and influencing skills to establish the necessary network required to deliver the successful implementation of the project. The Project Team Leader will establish the necessary management and administrative systems,

including in particular health and safety guidelines, within which the Project Team will operate. They will take direct responsibility for the management of the Project Team and lead the interaction of the project with key stakeholders and the local community. They will also take ownership of the reporting functions internally and externally. The Project Team Leader will report directly to the DHPLG, for overall project operation and monitoring purposes, and to the Project Management Group in terms of planning, implementation, management and monitoring of the individual project actions.

The **Project Scientific Advisor** will be responsible for providing scientific and technical support to all areas of the project. Key tasks will include developing and overseeing the scientific monitoring programmes, procuring external scientific support as necessary, analysing and reporting on scientific outputs, and providing ongoing technical support to the public awareness programme. The Project Scientific Advisor will also ensure that there are robust Quality Assurance and Quality Control (QA/QC) systems established, where necessary.

The **Project GIS/data Advisor** will be responsible for establishing and maintaining all geographical and scientific databases and ensuring their structure and compatibility with Ireland and EU catchment management systems and protocols. Key tasks will include data collection, preparing mapping for catchment selection and strategic catchment management plans, managing the databases and supporting the project's communications and information dissemination activities, reporting on action outcomes, providing ongoing technical input to the public awareness programme and ongoing stakeholder engagement.

The **Project Administrator** will be responsible for providing administrative support to the Project Team, as well as the day-to-day financial management and office operations (clerical, administrative and secretarial responsibilities). Key tasks will include administrative support to the Project Team, application of necessary financial and system controls, preparation of monthly and annual financial reports for the Project Team Leader, communications with stakeholders, general office duties, and management of the project website.

The **Project Catchment Scientist/Ecologists** will be recruited to focus on particular demonstration catchments and will be responsible for providing advice to participating farmers and stakeholders in selected catchments. Key tasks will include preparing training with regard to results based agricultural payment schemes, reviewing and auditing the implementation of the agricultural concrete High Status actions, monitoring the implementation and impacts of the measures implementation plans, evaluating of the cost-effectiveness of agricultural actions, reporting on action outcomes, providing ongoing technical input to the public awareness programme and ongoing stakeholder engagement.

Collectively, the Project Team will have day-to-day operational responsibility for the delivery of the project actions. Staff roles, management and reporting structures within the project will be finalised with DHPLG and Project Management Group once the Project Team is recruited. A breakdown of the time to be spent in each project action by the Project Team can be found in the project organogram.

Training requirements for the Project Team will be assessed as part of this action and will focus on areas such as project management up-skilling, health and safety, GIS training, website management and media relations, ecological and hydromorphological surveying, and other necessary scientific monitoring methods.

A Project Office will be established especially for the core project team in newly leased offices located appropriately to facilitate project management and data management activities, with additional regional office space rented to accommodate the project regional Catchment Scientist/Ecologist advisory staff during phase 2. Existing premises will be leased and all necessary equipment will be purchased to equip the office including computers, printers, scanners, photocopier, projectors, telephone, broadband connection, GPS equipment and cameras.

iv) Project Stakeholder Group: An over-arching Project Stakeholder Group of key stakeholders will be established to provide support to the project at national level. It is envisaged this group would be a wider benefit to Ireland's blue dot programme in addition to its role for the Waters of Life Project. The membership of the Project Stakeholder Group will be decided once the Project Team is operational and engaging with stakeholders. At the stage where the regional catchments have been selected and measures are being developed (Phase 2 of the project) it is envisaged that a regional stakeholder group will be established to provide support – the representation of key local stakeholders will be evolved once these demonstration catchments are known.

The Project Stakeholder Group will include representatives of the local community, farming and forestry organisations, fisheries interests and relevant Public Authorities. Meetings of the Project Stakeholder Group will be attended by the Project Management Group and Project Leader, as well as other members of the Project Team as and when necessary. The Project Stakeholder Group will inform, support and advise on project actions. The Project Stakeholder Group will meet at least once per year and will play an important role in ensuring stakeholder engagement and disseminating project results.

The Project Team will work out of a dedicated Project Office, which will be established to facilitate core management activities. This Project Office will act as the centre for project dissemination and communication activities. Project Management Group meetings will take place in the Project Office or at other suitable venues nearby, as necessary.

The regional Project Team will work from office space in the selected catchments during phase 2 of the project.

The national Stakeholders meetings will take place in the core project offices (or suitable nearby venues), whereas the Project Local Stakeholder Groups meetings will take place within the demonstration project areas.

This action will be continuous from the start of the project. The core Project Team recruitment and the opening of the core Project Office is expected to take 5 months to complete. With subsequent recruitment for phase 2 taking place in year 2 of the project. In order to minimise the risks of delays due to difficulties encountered in the recruitment process, the Co-ordinating Beneficiary will consider starting the recruitment process in advance of the starting date of the project. Key project staff will be recruited by the co-ordinating beneficiary (DHPLG) at the earliest possible stage in the project. Key technical staff within the co-ordinating beneficiary will oversee the project and will chair the project steering group. In addition, these DHPLG personnel will engage with the project team on all major project decisions and will be directly involved in developing work programmes and project metrics. The learnings from the project will be retained within the DHPLG, and within the main associated beneficiaries, and will also influence the operation of the Blue Dot Programme, through the presence of key personnel on the steering groups of both the Waters of LIFE project and the Blue Dot Programme.

The cost estimate associated with Action F.1 covers two main aspects of the project establishment. Firstly, it is anticipated that the recruitment of the project teams members would be facilitated by an external recruitment company contracted specifically for this purpose by the co-ordinating beneficiary; secondly, the selection and rental of a project office will account for another significant proportion of the cost estimate.

Reasons why this action is necessary:

The establishment of the project management structure comprised of the Co-ordinating Beneficiary, the Project Management Group, the Project Team, and the Project Stakeholder Group will ensure the ongoing effective running of the project and successful completion of project actions.

The Co-ordinating Beneficiary will be responsible for the delivery of the project, including its financial management and reporting. The Project Management Group will oversee implementation of project actions by the Project Team. The Project Team will be responsible for the day-to-day operation of the project, including implementation and monitoring of all project actions. Each member of the Project Team will have a defined and complementary set of skills and responsibilities necessary to deliver this multi-disciplinary project. The Project Stakeholder Group is essential to the smooth and effective functioning of the project, as it will support the partnership approach adopted by the Waters of Life project and the co-operation between the project beneficiaries and key stakeholders. It will also provide a forum to deal with conflicts and complaints that may arise during the project.

The establishment of a strong project structure from the outset will ensure the delivery of project actions as detailed in the project application. It will also foster and consolidate key partnerships and seek to develop and further expand the project actions beyond the lifetime of the project.

Recruitment of key staff who are suitably skilled and experienced in the required project disciplines will be key to ensuring the successful delivery of the project actions.

The Project Core Office will be a dedicated workspace for the Project Core Team and will house project equipment and facilitate project meetings. This office will be the headquarters for the core project team and will act as a centre for information dissemination to the local communities and other stakeholders, while firmly establishing a presence within the project area.

This centre will be supplemented by local based project offices once the engagement process commences in phase 2 of the projects – these regional centres will provide a focal point for the community, ensuring integration and co-operation in the delivery of project actions.

Constraints and assumptions:

The project establishment actions are the first activities and are therefore unconstrained by preceding activities. They are however vital in terms of expedience and getting this ambitious project off to a sufficiently rapid start. It is assumed that the project partners, having committed to this proposal will be readily able to facilitate the establishment of the various groups and to recruiting the Project Manager who will then drive the project establishment and subsequent activities.

Once in place the Project Manager will recruit key core staff for scientific and GIS support and for communications and financial management, and, at a later stage the regional support catchment team. To this end it is assumed there is ample resource across the EU and wider international catchment management communities who will be attracted to a project of this nature.

Expected results (quantitative information when possible):

- establish the necessary project management structures
- recruit suitably skilled and experienced project team members
- establish the core project office
- establish the Project Management Group
- establish the Project Stakeholder Committee
- host at least six Project Management Group meetings
- host at least six Project Stakeholder Group meetings

The Action will result in creation of 8.5 FTE jobs in the demonstration HS Catchments.

Deliverables:

Office launch

Minutes of project management and stakeholder meetings

Milestones:

- Team recruited and core offices opened by 1/08/2020
- Project Management Group first meeting held by 1/11/2020
- Project Stakeholder Group first meeting held by 1/06/2021.

ACTION F.2:

F.2: Development of the project data management systems

Beneficiary responsible for implementation:

Primarily DHPLG, EPA, Local Authorities

Description (what, how, where and when):

In the early stages of the project, the Project Team will establish an appropriate data management system for the project. The system will be used to manage all project data, including project reports, publications, financial information, measures implementation plans and other data. The data management system will allow information to be easily stored, retrieved, updated and analysed by the Project Team throughout the project.

The Waters of Life Project will generate a significant amount of practical information on the management of farms and forests and the implementation and monitoring of concrete High Status actions on project sites. This information will have a broad spatial, temporal and thematic spread and will be captured in Geographic Information System (GIS) and other relevant formats.

All data generated but the project, including supporting assessments of high status sites trends and pressures will be input to the project database.

This system will be compatible with the Co-ordinating Beneficiaries existing data management and GIS systems. These databases will be continually updated and added to by the Project Team throughout the duration of the project.

This activity will be conducted by the core project team and appropriate scientific support, located within the regional offices.

This action will be continual from the start of the project on until the end of the project.

Reasons why this action is necessary:

The Waters of Life will generate significant quantities of information, reports and data in a number of formats. A readily accessible integrated data management system is necessary to securely store these data and to maximise their potential use. The system will allow data to be easily stored, retrieved, updated and analysed by the Project Team throughout the project.

The Geographic Information System will be the key, central hub to ensure information generated by the preparatory, the concrete implementation and the monitoring actions (A, C and D Actions) are stored and used effectively. GIS are commonly used in catchment management, where mapping of the location and extent of features is required, as well as the integration of many different data sets. The GIS will be used to identify critical source areas for sediment and nutrient losses that are key drivers of the impacts on high status sites and also their associated water-dependant protected species and habitats.

The GIS will also allow the rapid production of maps for project sites. Maps are a key, efficient tool in measures implementation planning. The GIS will also be very important in increasing public awareness and understanding of High Status and the project, in the dissemination of project results (E Actions), and in reporting (F Actions).

Constraints and assumptions:

This task will be commenced by the project manager and then followed up by the GIS support when in place so is dependent on the project establishment task (Action F.1).

Expected results (quantitative information when possible):

It is expected that an appropriate, integrated and multifunctional data management system will be established for the Waters of Life project. This will include a dedicated Geographical Information System for the high status catchments nationally and more specifically for those selected as demonstration catchments, incorporating all relevant datasets currently available, and populated with data generated during this project.

Deliverables:

GIS and data management databases

Milestones:

- GIS and Data Management Systems established by1/03/2021.

ACTION F.3:

F.3: Project and Financial Management and Reporting (including Annual reports, End of Project Report and Recommendations, and independent audit)

Beneficiary responsible for implementation:

Primarily DHPLG.

Description (what, how, where and when):

The longer term operation and management of the Waters of Life Project will continue to engage the four essential components - i) the Co-ordinating Beneficiary, ii) the Project Management Group, iii) the Project Team, and iv) the Project Stakeholder Group as described under Action F.1.

A strong project management approach will be a critical element in the efficient running and functioning of this project. The Project Leader will be responsible for oversight of programme, quality and finances, supported by the core team throughout the project's duration.

The Co-ordinating Beneficiary will have ongoing responsibility for the delivery of the project, including its financial management and reporting. The Project Management Group will continue to oversee implementation of project actions by the Project Team. The Project Team will continue to be responsible for the day-to-day operation of the project, including implementation and monitoring of all project actions. Each member of the Project Team will have a defined and complementary set of skills and responsibilities necessary to deliver this multi-disciplinary project. The Project Stakeholder Group is essential to the smooth and effective functioning of the project, as it will support the partnership approach adopted by the Waters of Life project and the co-operation between the project beneficiaries and key stakeholders. It will also provide a forum to deal with conflicts and complaints that may arise during the project.

Project and financial management are key elements in ensuring that fiscal integrity is maintained throughout the project. The establishment of these systems of accountability at the start of the project are essential to maintain control of all aspects of the project and set the tone for how the project is managed overall. This is especially important for a project of this nature whereby both the central project team, and the individuals themselves (particularly the catchment scientists), will often have autonomous responsibility for several projects actions and therefore will need strong management structures in place to ensure the integrity of the project is maintained. The significant costs associated with this action relate to the development and establishment of robust project and financial management structures at the outset (most likely by external professional consultants), and the maintenance and auditing of these management structures over the lifetime of the project.

The project management structure and details of the roles and responsibilities of persons and organisations involved are also described under Action F.1. The ongoing project management roles entail routine project reporting including annual reports on the progress and findings which will be disseminated via the communications activities (Action E).

A green procurement program will be developed to include a life-cycle assessment of the environmental impacts of products and services and a set of criteria against which purchase

and contract decisions will be made. A green purchasing policy will be adopted to select materials and equipment based, inter alia, on environment impact, favouring recognised eco-labelling schemes. Finally, effective planning prior to any procurement of products or services will ensure that only what is absolutely required is purchased, therefore reducing waste.

An end of project report will summarise all of the projects activities and findings and provide a lessons learned approach so that subsequent application of policy to the wider network of high status sites can be improved.

- A project summary report will be completed. The report will set out the projects aims, objectives and best practice methodologies and summarises the results for each demonstration catchment. The report will also set out the implications of the project findings for management interventions in HS catchments and make recommendations on how these might be incorporated in future policy and intervention schemes.

- A non-technical summary report will be prepared for the lay reader to ensure accessibility to all interested parties. The non-technical report will be approximately 5 to10 pages long and made available in both English and Irish. It will present the project, its objectives, and actions completed using clear language with the general public as the target audience. Both reports will be made available to download via the Waters of Life project website and publicised in the newsletter and social media.

An effective system of financial management will be a critical element in the efficient running and functioning of this project. In the first instance, monies drawn down under this project will be lodged to a suspense account which will be allocated its own unique account number. Within the internal budget system of the DHPLG, provision will be made for the amount of co-funding expenditure required to be paid out to the project.

An independent auditor, nominated by the Co-ordinating Beneficiary will verify the financial statements that will be provided to the European Commission. This audit will not only take account of Irish legislation and accounting rules, but also certify that all costs incurred respect to the LIFE-IP Common Provisions.

At the outset of the project, the Co-ordinating Beneficiary in conjunction with the Project Management Group will establish the necessary project and financial management structures.

As set out in Form B6 ***Mobilising Other Funds***, there is a high degree of certainty in relation to funding availability. When the review and elaboration of detailed work programmes have been completed at the end of Phase 1 of the project, the DHPLG, as Contracting Authority will liaise with other governmental parties to ensure that planned budgets are in place, in which case the contingency allowance will be released towards the project implementation. If a shortfall does arise the DHPLG will consider other funding opportunities for example agri-

environmental funding and stakeholder support in order to maximise the available funds and ensure the contingency is expended on core project delivery.

The Co-ordinating Beneficiary will be responsible for overseeing financial management and the Project Team. In particular, the Project Leader and Project Administrator will take charge of day-to-day project and financial management.

Appropriate training in the management and financial systems will be provided to staff within the Co-ordinating Beneficiary and Project Team, as necessary.

At operational level, the Project Administrator will certify all items of expenditure for payment (primarily the payments/grants to farmers under the RBAP Scheme), and ensure compliance with the internal financial control systems of the Co-ordinating Beneficiary. The regional catchment scientist/ecologist will be involved in supporting this financial management system through certification of these payments at demonstration catchment-level. The Project Administrator will be responsible for maintaining a comprehensive analysis of all project expenditure. This analysis will include projected expenditure over the course of the project. The Project Administrator will report to the Project Team Leader.

The Project Team Leader will have overall responsibility for the project management of the Waters of Life project on an ongoing basis. This will be conducted from the core project offices.

The Project Administrator will have a major role to play in the financial management of the project. Responsibilities include maintaining up-to-date account books and the retention of appropriate supporting documentation for all expenditure, income and revenue for the project, including invoices and receipts, Timesheets and related documents will be used to calculate overheads. The Project Team Leader will have overall responsibility for the financial management of the project on an ongoing basis. This will be conducted from the core project offices.

This action will be continual from the start of the project on until the end of the project.

The independent audit action will take place in the final half year of the project.

Reasons why this action is necessary:

The ongoing project management activities are essential to ensure the effective operation of this project, particularly in phase 2 when the implementation in the selected catchments is rolled out on a regional basis and the team is increased with local catchment scientist/ecologists.

The financial management action is required to ensure the proper and efficient financial management of the project. The project partners will be fully aware at all times of the financial reporting requirements of the project, and the proper financial management of this project will be delivered.

The independent audit action is required by LIFE-IP to verify the financial statements produced as part of the project. It will also be responsible for verifying financial statements with respect to national legislation and accounting rules, and certifying that all costs incurred respect the LIFE-IP standard administrative provisions.

Constraints and assumptions:

The ongoing effective operation initially will be driven by recruitment of a high calibre project manager and supporting core team who work well together as a team and cover the multi-disciplinary skill sets required to deliver this Waters of Life project. These being management, communications, science (ecology, hydrology/hydromorphology, agriculture, forestry), finance and GIS/data management.

The team will be augmented in phase 2 with regional support by catchment scientist/ecologists to implement the measures.

Again it is assumed that the project will attract and be able to retain appropriate staff. To ensure this it is assumed that in the after-life planning phase the project beneficiaries will take actions to absorb the policy implications, deliverables, knowledge and skills delivered by the project into Ireland's catchment management structures and systems.

Expected results (quantitative information when possible):

An efficient, accountable and transparent project management structure (including an audited financial system) will be established at the outset of the project.

Up to-date books of account and the retention of appropriate supporting documentation for all expenditure, income and revenue, including invoices, receipts, timesheets and documents will be filed.

Deliverables:

Early establishment of a detailed monitoring programme to measure project progress;
An end of project report;
Non- technical summary project report;
An independent financial audit of the Waters of Life project - Auditor's report

Milestones:

- End of Project Reporting completed including Final Audit Report by 31/12/2026.

ACTION F.4:

F.4: Recruit Locally Based Catchment Teams

Beneficiary responsible for implementation:

DHPLG, Local Authorities

Description (what, how, where and when):

Working with local communities and farmers is a critical element of this project and having locally based catchment teams is the principal mechanism for doing this. Establishing locally based teams will foster trust and extend the social reach of the project within local communities. It will engender a sense of partnership and help to foster an appreciation of the value of HS waters, the issues confronting them and a sense of ownership of the measures being implemented among local communities. It will also allow local teams to build a detailed understanding of the catchment and issues that may be influencing HS waters. In addition it is important that the team are in place to provide technical oversight of local project works and to collaborate and offer advice and support to farmers and local community members when implementing measures.

Each locally based project team will consist of a catchment scientist/ecologist operating from a local project catchment office. Local teams will report to the Project Manager and be supported by the core Project Team. Local teams will be key to establishing and supporting local stakeholder groups and networks.

Reasons why this action is necessary:

A local presence in the demonstration catchments is essential to establishing trust and rapport with local communities and landowners. It will also provide insight into catchment dynamics and provide a conduit for information flow to and feedback from locals, thus giving them an effective voice and a determining role in project actions.

Constraints and assumptions:

Appointment of locally based teams requires action A.3 Selection of Demonstration catchments to be completed although recruitment processes can commence in the final phase of catchment selection and also depends on the Project Establishment action F.1 within which the roles of these team members are further described.

Expected results (quantitative information when possible):

The action will provide a local project identity through recruitment of locally based catchment teams and establishment of a project office in each of 5 demonstration catchments and will signal the project's commitment to investing in, and to true collaboration with local communities. It will build trust and awareness of HS waters, their socio-economic value to locals and facilitate the behavioural change that will secure the long term protection of such areas. The locally based teams will also provide project oversight and logistical support on the ground for actions and measures implementation, training, local public events and project administration.

Deliverables:

The action will deliver 5 locally based project scientists/ecologists, and establish local project offices within the demonstration catchments.

Milestones:

- 5 x Locally Based Catchment Teams established by 1/08/2020.

ACTION F.5:

F.5: Project After-LIFE Plan

Beneficiary responsible for implementation:

Primarily DHPLG

Description (what, how, where and when):

The Project Team, in consultation with the project beneficiaries and other relevant local stakeholders (e.g. those on the Stakeholders Committee), will develop an After-LIFE Plan as part of the final project report and executive summary (Action F.3).

The After-LIFE Plan will set out how actions initiated in the Waters of Life project will continue in the years following project completion. In particular this will focus of the integration of the project's findings into Irish policy and Ireland's third and later cycle River Basin Management Plans. It will also outline how the longer term management and protection of the high status sites will be assured in the selected demonstration catchments and the wider high status sites network.

The After-LIFE Plan will build on the recommendations and guidance derived from the project, specifically the appropriate support measures required to sustain the project's achievements, under relevant national policies and programmes, and under the Rural Development Programme. As required, the After-LIFE Plan will detail which actions will be carried out, where, when and by whom, as well as the sources of finance required. The knowledge acquired during the Waters of Life Project regarding sustainable farming and forestry practices and other pressures (hydromorphology, turf cutting and the threat of climate change) in relation to high status site protection will be advocated in the selected demonstration catchments after project completion by the Teagasc agricultural and forestry advisory services and Forest Service Inspectors and by the LAWPro team in relation to the blue dot programme. The successful Waters of Life project actions will also be made available for wider geographic application, particularly in other high status priority catchments nationally.

Forest support measures associated with the establishment and management of native woodland, and conversion from conifer forest to native woodland include a long-term commitment by the Forest Service to continue annual premium payments for between 4 and 15 years after the completion on the Waters of Life project. Coillte will continue to support and maintain the measures implemented during the Waters of Life project for the remainder of the relevant forest management plan, and into successive management cycles where measures are deemed appropriate and effective.

Publically-owned forests that have been restructured to long term retention forests will be retained as protective and environmental zones for the benefit of the high status sites.

Long-term retention and continuous cover forest also entail a long-term commitment as the management plans to implement these systems are long-term in nature. Coillte and the Forest Service will undertake to complete trials of practice developed in Ireland's recent Forest and Waters Guidance. Once established, these silvicultural systems will be continued, with controls applied, as per the relevant provisions of the 1946 Forestry Act. In addition, the

successful forestry operations and silvicultural systems trialled within Waters of Life project will be considered for inclusion by the Forest Service, in other catchment-based forest plans (including those for other high status sites catchments) and for inclusion in future guidelines, procedures and requirements governing forestry generally.

Ongoing scientific monitoring of the condition of high status sites by DHPLG in the selected demonstration catchments will occur at least every six years. Where possible this will be integrated in the National WFD monitoring programme. Complementary actions designed to maximise the economic sustainability of farm enterprises engaged in management practices complementary to the protection/restoration of high status sites will continue after the Waters of Life project completion (e.g. marketing and branding initiatives, tourism infrastructure).

Dissemination of project findings will continue after project completion, through the project website, scientific publications, media exposure and information bulletins. The beneficiary organisations will continue to train their staff, private forest and farm planners, and land managers in the development and implementation of measures implementation plans/actions for the high status sites.

This activity will be conducted by the core project team and appropriate scientific support, located within the core offices.

As part of the preparation of the After-LIFE Plan, continuation/valorisation of the project's results after the end of the project will be re-visited and updated.

Reasons why this action is necessary:

As well as being a required output for a LIFE-IP Project, the After-LIFE Conservation Plan will help to ensure the sustained delivery of the project's objectives once the project has been completed.

This will be of particular benefit to Ireland's wider network of high status sites (at which Ireland's high status site *"blue dot"* programme is targeted in the second river basin planning cycle) and will input into Ireland's third cycle plan and programme of measures.

In addition, the wider application of successful high status implementation actions to Ireland's protected water-dependant habitats (many of which overlap with the High Status water) will support the protection of biodiversity through species and habitats, in particular the freshwater pearl mussel catchments. This deliverable will therefore, in the longer term, contribute toward the future viability of freshwater pearl mussel populations elsewhere in Ireland.

The successful outcomes of the Waters of Life project will influence future agricultural and forest policy as well as management of other relevant pressures, especially with respect to the protection and restoration of high status sites and also to the biodiversity through the

conservation water-dependant species such as Ireland's freshwater pearl mussel populations.

Constraints and assumptions:

The effective close out of the project will revisit the initial objectives and critically appraise their delivery, identifying project successes and making recommendations for these to be absorbed into the wider high status network protection systems. The appraisal will also critically consider the gaps and further opportunities again delivering clear recommendations to address these in the after-life phase.

Again it is assumed that in the after-life planning phase the project beneficiaries will take actions to absorb the policy implications, deliverables, knowledge and skills delivered by the project into Ireland's catchment management structures and systems.

Expected results (quantitative information when possible):

- A completed After-LIFE Conservation Plan will form a discrete chapter of the final project report. The After-LIFE High Status Plan will be made available in English, in a paper and electronic format.
- A non-technical summary of these findings will be prepared and disseminated under Action E7 of the communications actions.

Deliverables:

After-LIFE Waters of Life Plan - 82 months

Milestones:

- After-LIFE Plan delivered by 31/12/2026.

ACTION F.6:

F.6: Integration of the project with national and local policy objectives

Beneficiary responsible for implementation:

Primarily DHPLG

Description (what, how, where and when):

A key component of the success of the project will be its ability to effectively implement national and local policy objectives in the project catchments. In addition, the outcomes of the project, both during and after project completion will also influence the development of policy in relation to water quality, forestry, agriculture, planning and development, flood protection and biodiversity.

The Co-ordinating Beneficiary has ultimate responsibility for water policy which is substantially delivered through the River Basin Management planning process. Much of the implementation of the measures in the current River Basin Management Plan 2018-2021 are being undertaken by the Waters of Life project's Associated Beneficiaries. The strong links between the project partners and the key policy actors will ensure that outputs and learnings from the Waters of Life project will positively influence decisions relating to development of national water policy in general and protection of HS waters in particular.

The Waters of Life project will actively seek to influence relevant policy areas by channelling project outputs to key policy makers in a timely manner. The Waters of Life core team will prepare a list of scheduled revisions of critical policy elements and the instruments used for their implementation or delivery, and will maintain this list throughout the project with any changes or revisions that occur over the project's life. This will ensure that project work schedules and deliverables are aligned with policy revisions to the maximum extent possible and provided to relevant policy actors in timeframes that maximise their impact.

Regular reporting on emerging project findings with relevant links to policy implementation will be undertaken by the project team, with particular emphasis placed on reporting to the RBMP governance structures at the National Coordination and Management Committee (NCMC) and the Water Policy Advisory Committee (WPAC). As core elements of the RBMP governance structures, these committees are best placed to elevate project outcomes and use them to influence policy formation at Government level. In addition, the in-depth participation of the Local Authorities shared service (LAWPro) in the project will serve to strengthen the critical links to Planning Authorities and provide a conduit for project findings and recommendation to influence Local Area Development Plans in the project catchments.

Action F.6 will be continual from quarter 2 in year 1 of the project until the end of the project and will broadly align with the period covered by the next RBMP (2022 to 2027). The completion of action F.6 aligns with the preparation of the subsequent RBMP for the period post 2027. The completion of this action will therefore allow 12 months for the outcomes and learnings of the project to feed into the development of the subsequent RBMP.

This action will be managed by the Project Leader and conducted by the core project team with support as required from the DHPLG, LAWPro, DAFM, OPW and other policy organisations including NPWS.

Reasons why this action is necessary:

The purpose of the Waters of LIFE project is to support implementation of the national RBMP for Ireland. The river basin management planning process is the principle mechanism for delivering implementation of national water policy at a local level. The Waters of Life project will contribute significantly to our knowledge of the HS catchment resource nationally and provide an understanding of how these catchments function. Critically, this will inform the integrated implementation of catchment-wide measures and how effective policy interventions can be best designed to deliver WFD objectives for HS waters. The demonstration catchments established in the Waters of Life project will serve as *de facto* trialling areas for new measures that can be brought forward to future iterations of the RBMP.

Capturing the effectiveness of current policy as implemented through the Waters of Life project in the areas of water quality, forestry, agriculture, planning and development, flood protection and biodiversity will inform and influence future policy decisions in these areas. The reporting of this effectiveness will also ensure that future measures or actions developed within the project will be highlighted through the RBMP governance structures and elevated to national policy.

Constraints and assumptions:

This task will be led by the project manager and supported by input from the core project team when in place, so is dependent on the project establishment task (Action F.1).

National policies will change during the lifetime of the project, depending on their current cycle. For example, changes to the Rural Development Programme, Forestry Programme, National Biodiversity Action Plan, Flood Risk Management Plans and the local Development Plans in the selected catchments. Such changes will be recorded by the project in its schedule of policy revisions, and considered In relation to project programmes and timely outputs to relevant policy actors.

Expected results (quantitative information when possible):

The continuous engagement with key policy actors and implementers through this action, in particular reporting to the NCMC and WPAC on a biannual basis, will embed ongoing learnings from the Waters of Life project in the process of informing and formulating water policy. The interim and final policy reports from the project will also serve to act as the basis and evidence for the success of the project in implementing policy across a variety of areas (e.g. biodiversity, planning, forestry, etc.) and will feed into the new iterations of the existing plans and policies in these relevant areas.

Deliverables:

Schedule of water policy and Instrument revisions planned over the life of the project and for five years post project.

Interim and final policy integration reports.

Milestones:

- Initial set up – 12 months.
- Schedule of policy and instrument revisions – 15 months
- Interim Policy Report – 48 months
- Final Policy Report – 82 months.
- Integration of project with national and local policy objectives delivered 31/12/2026.

LIFE Integrated Projects 2018 - C2

DELIVERABLE, MILESTONES AND REPORTING SCHEDULE

MAIN DELIVERABLE PRODUCTS OF THE PROJECT

Name of the Deliverable	Code of the associated action	Deadline
High Status Sites Characterisation, Landscapes of HS Sites, and Metrics for Determining Status Change Reports delivered	A.1	1/12/2020
Framework of HS Best Practice Measures delivered	A.2	1/03/2021
Demonstration Catchment Selection Report	A.3	1/03/2022
RBAPS and Guidance delivered	A.4	1/03/2022
Initial Community Engagement Report	A.5	1/03/2022
Commonage stakeholders in demonstration catchments identified	A.6	1/03/2022
Licence, consents, consultations and permits discharged	A.7	1/06/2023
Phase 1 Project Review and Detailed Phase 2 Work Programme	A.8	1/06/2022
Initial Catchment Walkover Investigations completed	C.1	1/09/2022
Detailed catchment follow-up investigations completed	C.2	1/09/2022
Strategic Catchment Management Plans completed	C.3	1/12/2022
6 x Catchment Walkover Investigation Reports	C.1	1/09/2022
6 x Detailed Catchment Investigations Reports	C.2	1/09/2022
6 x Strategic Catchment Management Plans	C.3	1/12/2022
Agricultural and Farm Advisors trained	C.4	1/12/2022
Farmers and Practitioners trained	C.5	1/03/2023
Implementation plans agreed with landowners	C.6	1/03/2023
Roll out of programme of measures	C.7	31/12/2026
Rural Development Scheme Measures Support Teams established	C.8	31/12/2026
HS Catchments Monitoring Programme established	D.1	1/9/2022
Ongoing HS Monitoring Reporting - quarterly	D.2	31/12/2026
Report on the process of community engagement and inculcation of custodianship of HS waters	D.3	31/12/2026
Project Identity materials	E.1	1/09/2020
Waters of Life Website	E.2	1/09/2020
Promotional Material	E.3	31/12/2026
Project Networking report	E.4	31/12/2026
Project Launch Event report	E.5	1/09/2020
Community meetings reports	E.6	31/12/2026
End of Project Conference report	E.8	31/12/2026
Project Management Reports - annual	F.1	31/12/2026
GIS and Data Management Systems	F.2	1/03/2021
End of Project Reporting completed including Final Audit Report	F.3	31/12/2026
Interim Policy Report	F.3	1/03/2024
Final Policy Report	F.3	31/12/2026
After-LIFE Plan	F.5	31/12/2026

MAIN MILESTONES OF THE PROJECT

Name of the Milestone	Code of the associated action	Deadline
HS Sites Characterisation and Metrics for Determining Status Change reports delivered	A.1	1/12/2020
Final Framework of HS Measures delivered	A.2	1/03/2021
Demonstration Catchments selected	A.3	1/03/2022
RBAPS and Guidance delivered	A.4	1/03/2022
Initial Community Engagement re Concrete Actions completed	A.5	1/03/2022
Commonage Stakeholders identified	A.6	1/03/2022
Licence, consents, consultations and permits discharged	A.7	1/06/2023
Phase 1 and Work Programme Phase 2 completed	A.8	1/06/2022
Initial catchment walkover investigations completed	C.1	1/09/2022
Detailed catchment follow-up investigations completed	C.2	1/09/2022
Strategic Catchment Management Plans completed	C.3	1/12/2022
Agricultural and Farm Advisors Trained	C.4	1/12/2022
Farmers and Practitioners Trained	C.5	1/03/2023
Implementation plans agreed with landowners	C.6	1/03/2023
Roll out of Programmes of Measures	C.7	31/12/2026
Rural Development Scheme Measures Support Teams established	C.8	31/12/2026
HS Catchments Monitoring Programme established	D.1	1/9/2022
HS Catchments Monitoring Programme and Reporting implementation	D.2	31/12/2026
Assessment of the process of community engagement and inculcation of custodianship of HS waters	D.3	31/12/2026
Project Identity established	E.1	1/09/2020
Waters of Life Website established	E.2	1/09/2020
Promotional Material Delivered	E.3	31/12/2026
Project Networking ongoing	E.4	31/12/2026
Project Launch completed	E.5	1/09/2020
Community Meetings held	E.6	31/12/2026
School Visits held	E.7	31/12/2026
End of Project Conference held	E.8	31/12/2026
Project Establishment - team recruited and offices opened	F.1	1/08/2020
Project Establishment - Management Group first meeting	F.1	1/11/2020
Project Establishment - Stakeholder Group first meeting	F.1	1/03/2021
GIS and Data Management Systems established	F.2	1/03/2021
End of Project Reporting completed including Final Audit Report	F.3	31/12/2026
5 x Locally Based Catchment Teams established	F.4	1/08/2020
After-LIFE Plan delivered	F.5	31/12/2026
Integration of project with national and local policy objectives	F.6	31/12/2026

ACTIVITY REPORTS FORESEEN

Type of report	Deadline
Interim report and request for payment for Phase 1	28/02/2022
Final Report	31/03/2027

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TIMETABLE

List all actions ordered by number and using their numbers or names. Tick as appropriate.

Action	2019	**2020**				**2021**				**2022**				**2023**				**2024**				**2025**				**2026**			
	IV	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**	**I**	**II**	**III**	**IV**
A. Preparatory actions, elaboration of management plans and/or action plans :																													
A.1		✓	✓	✓																									
A.2			✓	✓	✓																								
A.3					✓	✓	✓	✓	✓																				
A.4					✓	✓	✓	✓	✓																				
A.5							✓	✓	✓																				
A.6								✓	✓																				
A.7				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓															
A.8								✓	✓	✓																			
C. Concrète (conservation/implementation) actions :																													
C.1									✓	✓																			
C.2										✓	✓																		
C.3										✓	✓	✓																	
C.4											✓	✓																	
C.5											✓	✓	✓																
C.6										✓	✓	✓	✓																
C.7													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
C.8													✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓

D. Monitoring of the impact of the project actions																													
D.1									✓	✓	✓																		
D.2											✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
D.3									✓	✓	✓																	✓	✓	✓
E. Public awareness and dissemination of results :																													
E.1		✓	✓																										
E.2		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E.3				✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E.4		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E.5			✓																										
E.6										✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E.7						✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
E.8																												✓	✓
F. Project management and monitoring of project progress:																													
F.1	✓	✓																											
F.2		✓	✓																										
F.3		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
F.4								✓	✓	✓																			
F.5																											✓	✓	✓
F.6			✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓