



EPA Research - 2014 Call

EPA Research – Water Research Call 2014

Technical Description



Comhshaol, Pobal agus Rialtas Áitiúil
Environment, Community and Local Government

The EPA Research Programme is funded by the Irish Government.

Environmental Protection Agency Research Call 2014: Water

This document provides the Technical Description for the Environmental Protection Agency **Water** Research Call 2014. Applicants should read the following carefully and also consult the other documentation provided (i.e. Guide for Applicants, Terms and Conditions for support of grant awards).

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Additional Documentation

Additional Documents available at: www.epa.ie:

- *2014 EPA Research Guide for Applicants*
- *2014 EPA Research Terms & Conditions for Support of Grant Awards*
- *2014 quick guide to the EPA on-line portal (How to make an application)*

1. Introduction

The EPA's Research Programme 2014-2020 is designed to identify pressures, inform policy and develop solutions to environmental challenges through the provision of strong evidence-based scientific knowledge:

- Identifying Pressures: Providing assessments of current environmental status and future trends to identify pressures on our environment.
- Informing Policy: Generating evidence, reviewing practices and building models to inform policy development and implementation.
- Developing Solutions: Using novel technologies and methods that address environmental challenges and provide green economy opportunities.

EPA Water Research

The EPA Research Programme has been allocated funding of approximately € 2.07m for new commitments in Water research. The overall aim of the water pillar is to support relevant water policy and to protect our water environment, contributing to achieving excellent water quality in Ireland. The EPA Research's water pillar deals with groundwater, surface water, transitional and coastal water; as well as wastewater, drinking, bathing and shellfish waters. The EPA Research's Water Pillar is structured into five thematic areas of research as follows:

- Safe Water;
- Ecosystem Services and Sustainability;
- Innovative Water Technologies;
- Understanding, Managing and Conserving our Water Resources; and
- Emerging and Cross-cutting Issues.

Multi- and inter-disciplinary research is required on these themes, with expected social, economic, technology, environment and policy impacts.

Funding Structure

The EPA invites research proposals under the specific topics listed in the table below. These proposals will be Desk Studies, Medium Scale or Large-Scale Projects:

- **Desk-Study** will last from 6 to 12 months with an indicative cost range of €50,000 to €100,000
- **Medium-Scale Project** will typically last from 24 to 36 months with an indicative cost range of €100,000 to €350,000;
- **Large-Scale Project** will last from 36-48 months with an indicative costs range of €350,000 to €500,000.

"Bottom-up" Topics

In response to the feedback received during the 2013 Consultation Exercise, "bottom-up" topics have been included into the Call (Water 2014 Call – Projects 5 and 7). For these topics, applicants can choose to apply for a Desk-Study, Medium-Scale project or a Large-Scale project (see definition above) responding to the scope (**or part of**) of the particular topic. It is expected that **up to one** large scale project or a **combination** of medium scale / desk studies will be funded.

For these topics, proposals will be selected based on their scientific merit, their value for money, relevance to the scope and based on the budget available. In the cases where more than one project is funded, the scope covered by each proposal will also be taken into account (i.e. to avoid duplication) when selecting projects for funding.

Applicants selecting a Desk-Study or Medium-Scale project, are expected to build synergies and linkages with other projects funded under the same topic, in the event, whereas more than one project would be funded.

All research proposals must **build on findings and recommendations** from past and current research projects (where relevant) and **demonstrate value for money**. Depending on the scope and quality of

research proposals received, no more than one project will be funded under each of the proposed topics detailed in this document, unless otherwise stated (i.e. bottom-up topics).

Where project outputs include data and/or technical solutions (Websites, developed software, database solutions etc.) then the format of same **must be agreed with the EPA** to ensure that they are compatible with EPA IT infrastructure and can be maintained by EPA after the completion of the project.

Open Access and Open Data

All projects must comply with the EPA's Open Data and Open Access rules, which are being aligned with Horizon 2020 for the 2014-2020 EPA Research Programme.

Call Topic Ref.	Thematic Areas and Project Titles	Budget (€)
Safe Water		
Water 2014 Call - Project 1	Investigation into the causes, impacts and potential mitigation measures to deal with diatom algal blooms in Ireland.	Max. €150,000
Water 2014 Call - Project 2	Designated Shellfish Areas: Define what acceptable standard for viruses in treated wastewater effluent discharges are?	Max. €75,000
Water 2014 Call - Project 3	Develop an understanding of the implications for Ireland of emerging standards on pharmaceuticals in receiving waters	Max. €75,000
Water 2014 Call - Project 4	Assessment of technologies for flood forecasting in Ireland	Max. €75,000
Ecosystem Services and Sustainability		
Water 2014 Call – Project 5	Role of ecosystem services in the provision of water-related services	€350,000 to €500,000
Innovative Water Technologies		
Water 2014 Call - Project 6	Technologies for monitoring, detecting and treating overflows from urban wastewater networks	Max. €75,000
Water 2014 Call - Project 7	Phosphorus from wastewater: Novel technologies for advanced treatment & re-use	€350,000 to €500,000
Water 2014 Call - Project 8	Low energy wastewater treatment processes, including the challenge for smaller wastewater treatment plants	Max. €75,000
Understanding, Managing and Conserving our Water Resources		
Water 2014 Call - Project 9	Assessing the impact of measures that prevent cattle access to watercourses	€350,000 to €500,000
Water 2014 Call - Project 10	Development of EFlows	Max. €75,000
Water 2014 Call - Project 11	Towards integrated water management	Max. €75,000
Water 2014 Call – Project 12	Development of Options for managing Drinking Water Abstractions	Max. €75,000

Application Process

Making an application online:

Applications must **ONLY** be made online <https://epa.smartsimple.ie>.

Guide to the EPA online application system:

The guide to the EPA online application system, '2014 Quick guide to the EPA online portal (making an application)', is available for download at www.epa.ie.

What to include in the application form:

To make the best application possible, it is recommended that you read the '2014 EPA Research guide for applicants' before drafting and submitting an application, available at www.epa.ie.

To make an application under any of the topic areas:

Applicants must use the correct **Call Topic Reference**, as indicated in this document, from the drop down menu on the EPA online system e.g. Water 2014 Call Project 1

It is the responsibility of the Applicants to ensure:

Proposals are submitted before the **call deadline**, and of the relevant Grant Authoriser (i.e. Research Offices / Managing Directors for companies) to ensure that the proposals are authorised before the **organisation approval deadline**.

2. Call Content

Theme 1: Safe Water

Project Title: *Investigation into the causes, impacts and potential mitigation measures to deal with diatom algal blooms in Ireland*

Project Type: Medium-Scale Project

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 1

Description

The Vartry Reservoir has had diatom blooms occurring for the past two years running and has a history of intermittent blooms on the lake. These blooms result in clogging of the filters, a reduction in treatment capacity and consequently water shortages in the North Wicklow/South Dublin area. These blooms can last for several weeks. Spring diatom blooms classically result from a combination of nutrients, silica together with increasing light levels and temperature. The aim of the research is to identify mitigation measures that could be implemented to reduce the impact of the blooms when they do occur on the water supply.

Proposals are invited for a research project to undertake the following:

- Carry-out investigative monitoring to identify the main sources of nutrients entering via streams and/or along the shoreline, considering subsurface flow paths into the water body, as well as nutrient release from lake sediments into the water column as a source of nutrient, and to quantify the nutrient inputs, comparing it against its ideal target loading or historic loading if data are available (and bearing in mind that it is a drinking water source);
- Identify any other potential sources responsible for the algal blooms and carry-out investigative monitoring to quantify inputs to the lake;
- Recommend a set of measures to reduce the inputs of nutrient or other identified sources at the key times of year when the diatom blooms occur – normally spring or autumn, therefore reducing the likelihood of diatom blooms;
- Assist in the prediction of these algal blooms to allow future blooms to be identified at an earlier stage; and
- Identify mitigation measures that could be implemented to reduce the impact of the blooms when they do occur on the water supply.

This project could look specifically at the Vartry Reservoir catchment (and other water supply systems with similar issues).

Project Structure and Funding:

It is expected that this project will be a 24 to 36-month Medium-Scale project with a budget of up to €150,000 (which includes a 5% provision for communication costs¹). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

¹ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Designated Shellfish Areas: Identification / establishment of microbiological standards including viruses for wastewater discharges for the protection of shellfish*

Project Type: Desk-Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 2

Description

EPA wastewater discharge authorisations require the holder to complete a microbiological assessment (including viruses) of the impact of the wastewater discharges on adjacent shellfish waters. However, there are currently no standards for viruses in treated wastewater effluent against which to measure and assess their impact.

Proposals are invited for a research project to undertake the following:

- Review findings of relevant national and international research to identify microbiological standards that exist internationally.
- Explore the use of “emerging” microbiological techniques, such as Polymerase Chain Reaction (qPCR) methods.
- Drawing conclusions to suggest approaches to setting acceptable microbiological standards with consideration for the current technical limitations on measurement of same.

The scope of the proposed project encompasses designated shellfish areas.

Project Structure and Funding:

It is expected that this project will be a 9-12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs²). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

² For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Develop an understanding of the implications for Ireland of emerging standards on pharmaceuticals in receiving waters*

Project Type: Desk-Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 3

Description

Article 16(4) of the Water Framework Directive (WFD) requires that a review of the priority substances takes place every four years. 12 new substances have been added to the list of substances posing a risk to surface waters under the new Directive 2013/39/EU. Three pharmaceuticals have been included on the EU “watch list” and therefore could, in the future, be added to the priority substances list: hormonal preparations 17alphaethinylestradiol and 17beta-estradiol, and the painkiller Diclofenac. The three pharmaceuticals are widely used and pose risks to the aquatic environment. Other pharmaceuticals are likely to be considered in the new review of priority and priority hazardous substances. The WFD requires the monitoring of priority substances and the reporting of exceedances of permitted concentrations. There are requirements to adopt measures to control such discharges, with progressive reductions in emissions for priority substances and cessation or phasing out of priority hazardous substances.

In order to understand the implications of the potential addition of the three pharmaceuticals in further reviews of the EU priority list, a baseline study is required for Ireland. The study will help identify the sources and prevalence of these pharmaceuticals in the Irish context. Possible compliance risk and mitigation measures could also be a focus.

Proposals are invited for a research project to undertake the following:

- Review all previous relevant national and EU-wide studies to identify sources, receptors and control measures. Measures should include source control and treatment options, with technical and economic considerations both identified and quantified.
- Evaluate the mobility of these pharmaceuticals in the Irish context.
- Based on the literature review, provide a preliminary risk assessment of the sources and loadings of these pharmaceuticals in Ireland.
- Collate all relevant data sets of the risk assessment tool.
- With the use of the risk assessment tool, score Irish urban wastewater agglomerations and identify all potentially vulnerable receiving waters. Consideration should also be given to the impacts from small point sources in the rural environment.

Project Structure and Funding:

It is expected that this project will be a 9-12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs³). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

³ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Assessment of technologies for flood forecasting in Ireland*

Project Type: Desk-Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 4

Description

The recent "Strategic review of options for flood forecasting and warning in Ireland" has examined the most suitable organisational and management structures for a National flood forecasting service for Ireland, as well as the required infrastructure. Later this year, the outcomes of the Catchment Flood Risk Assessment and Management (CFRAM⁴) Programme will identify and prioritise areas requiring flood forecasting systems. Whilst there are a number of organisations in Ireland that are involved in the research and operational aspects of flood forecasting, no single authority has been assigned the lead role in flood forecasting.

The proposed research should examine current flood forecasting systems in operation in Ireland and the 'state-of-the-art' operational flood forecasting technology elsewhere both from the data handling (management/processing) side and the hydrological modelling software that could be used in such systems.

Proposals are invited for a research project to assess the more technical aspects of flood forecasting by undertaking the following:

- Review of flood forecasting technologies in use in Ireland and elsewhere;
- Recommend the data handling system & front-end that would be best suited for use in Ireland;
- Recommend the hydrological/hydraulic models that would be most suited for use in Ireland;
- Recommend the optimal use of weather data, observations and forecasts, for flood forecasting;
- Demonstrate how the proposed systems would perform in a number of pilot priority catchments.

Project Structure and Funding:

It is expected that this project will be a 12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs⁵). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

⁴ <http://www.cfram.ie/>

⁵ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Theme 2: Ecosystem Services and Sustainability

Project Title: *Role of ecosystem services in the provision of water-related services*

Project Type: **Bottom-up Topic⁶**

*To make an application under this topic area, you must use the following **Call Topic Reference**:*

Water 2014 Call - Project 5

Description

The 2012 EU Water Blueprint strives to achieve widespread improvement in aquatic ecosystems. Mapping and assessment of ecosystem services feature in the EU Biodiversity Strategy, whereby ecosystem services will be mapped (by 2014) and valued (by 2020) by each Member State. The Ecosystem Services Approach is a promising concept to support the implementation of the Water Framework Directive (WFD). It can be perceived as a “linking concept” between nature protection, water management, energy and other sectors. It can also act as a focal point for linking different environmental policies, such as the Marine Strategy Framework Directive, the Floods Directive, the Nitrates Directive, the Birds and Habitats Directives and the Water Framework Directive. The role of ecosystem services in the provision of water-related services has also been identified as one of eight priority areas by the European Innovation Partnership on Water.

Increasing water demand and climate change inducing short- to long-term variations in water availability (including extreme events) have increased the stress on water bodies, associated ecosystems and existing infrastructures. Reconciling water demand and availability requires new integrated technological and socio-economic concepts to achieve water demand management, optimal water distribution, water use and re-use while minimising risks of overexploiting water systems. An Ecosystem Services Approach can help the prioritisation of financial resources for integrated water management programmes.

Proposals are invited for research project(s) aiming at understanding, maintaining and safeguarding the essential functions and processes of aquatic ecosystems (e.g. aquatic habitats, ecosystem services, ecosystem resilience and ecological connectivity, restoration of natural ecosystems and economic valuation). It is intended that project(s) funded under this topic will further our understanding of what actual ‘ecosystem services’ are provided by our surface waters and groundwater, and of the concept of aquatic ecosystem services in the context of the provision of water-related services (including reconciling water demand and availability).

It is essential that project(s) carry out a comprehensive review of existing and past research & experience on water-related ecosystem services⁷ to generate lessons learned. A review of existing knowledge on Ecosystem Services Approaches implementation is needed; evaluating the applicability of the concept for WFD implementation, and recommending good practices for Ecosystem Services Approaches implementation.

Proposal(s) could also cover for example (but are not limited to) the following points:

- The links between geomorphological components, good ecological status and ecosystem functioning, with both preservation and restoration perspectives.
- The impact of multiple drivers including land use change on structural and functional capacity of aquatic ecosystems (such as biodiversity and tipping points) and on the impacts on quality and provision of different ecosystem services.
- The development of valuation tools which integrate values at different scales. It may also be helpful to encompass physical, biological and socio-economic components of the aquatic environment.

⁶ See page 2

⁷ including INTERREG and LIFE projects on flood management, integrated river basin management, E-flows, river floodplain restoration, and other water quality improvement projects

Project Structure and Funding:

It is expected to fund **up to one** Large Scale **or a combination of** Medium Scale/Desk Studies projects under this topic – The total budget allocated to **this topic** is €350,000 to €500,000 (which includes a 5% provision for communication costs⁸). Please refer to the 2014 Guide for Applicants for further details.

Project(s) funded under this topic will be expected to liaise with the relevant projects funded under the 2014 EPA Sustainability Call.

⁸ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Theme 3: Innovative Water Technologies

Project Title: *Technologies for monitoring, detecting and treating overflows from urban wastewater networks*

Project Type: Desk-Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 6

Description

In Ireland, sewer systems are typically combined systems, in that they are designed to carry both sewage and surface water run-off. Combined sewer systems are typically designed for average rather than peak flows. During rainfall events the volume of combined sewerage and surface water flow can be greater than the capacity of a sewer. When this occurs, there is typically a discharge from the sewer network to an adjacent watercourse via a Storm Water Overflow (SWO), these may also be referred to as a Combined Sewer Overflow (CSO)). There are also Emergency Overflows in a sewer network, which are designed to allow for a discharge to an adjacent watercourse, in the event of a mechanical or electrical failure of a pump. This type of overflow should only be activated in the event of an electrical or mechanical failure.

The contents of these sewer overflows typically contain raw sewage and a range of dissolved and particulate contaminants including heavy metals, PAHs, oils & grease, and sediments; many of which are priority substances. These discharges may also present a public health risk when discharged to or adjacent to a shellfish water, a designated bathing water or water with amenity value.

In order to appropriately characterise and, where relevant, treat such overflows, information is required on their operation including; overflow activation, flow measurement and event duration. The level of information required about an overflow is typically dependent on the impact of the overflow on the receiving water. Due to the location of the overflows, this information is often difficult to obtain, i.e. the overflow may be difficult to access (e.g. under a busy road) or in a remote location (no services for remote monitoring).

The proposed research will provide an assessment of available and emerging techniques and equipment to detect, monitor, record and communicate the activation of an overflow in a sewer network. The research work should also identify and consider options for treatment of overflows prior to discharge in an Irish context.

Proposals are invited for a research project to undertake the following:

- Review relevant international practice and studies in the context of the Urban Waste Water Treatment Directive, the Water Framework Directive and other current and potential legislative requirements.
- Identify, review and comment on the findings of any relevant international studies on overflow discharges in other countries with combined sewer systems.
- Assess current and developing techniques and equipment for overflow event monitoring, detection and reporting, focusing on a range of equipment and considering the criticality of a sewer and of the receiving waters, which may require higher / lower levels of monitoring and detection.
- Identify and assess international best management practices and treatment technologies suitable for an Irish context. This should also consider the use on in-line and off-line storage to prevent overflows.
- Evaluate best practice and treatment options in terms of environmental, quantitative, qualitative and economic criteria.

Project Structure and Funding:

It is expected that this project would be a 9 to 12-month Desk-Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs⁹). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

⁹ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Phosphorus from wastewater: Novel technologies for advanced treatment & re-use*

Project Type: **Bottom-up Topic¹⁰**

*To make an application under this topic area, you must use the following **Call Topic Reference**:*

Water 2014 Call - Project 7

Description

In the 2013 European Commission's 7th Science for Environment Policy 'In-depth Report', which addresses "Sustainable Phosphorus Use", the EU is estimated to waste 1.25 million tonnes of phosphorus annually, resulting in considerable negative environmental impacts through eutrophication. Phosphate rock has recently been added on the list of critical raw materials in the forthcoming 2014 EC Communication¹¹ on the Review of the list of critical raw materials for the EU and the implementation of the Raw Materials Initiative. Research has recently begun to address the question of phosphorus as a non-renewable resource, which is an issue regularly covered by the European Sustainable Phosphorus Platform¹².

Municipal wastewater represents a phosphorus reserve. Numerous techniques have been developed to recover phosphorus from a range of waste sources. They vary from low-tech small-scale solutions, such as direct urine use to high-tech, large-scale solutions, such as recovery of struvite (magnesium ammonium phosphate) from Wastewater Treatment Plants (WWTPs). Phosphorus recovery could also have implications for water and sanitation, as well as food production and environmental protection. There are constant developments in the field of phosphorus recovery, but these can come at economic costs.

Proposals are invited for research project(s) to evaluate and compare the different processes in order to inform decision-making in this area. The research should cover novel technologies (including existing, emerging and new) for advanced treatment and Phosphorus re-use; and aims at promoting the sustainable use of phosphates through recovery and recycling, and a better understanding of the role of phosphates in the environment.

The project(s) funded under this topic should carry out a comprehensive review of existing technologies and practices in this area, including the EU FP7 P-Rex demonstration project¹³; and address the feasibility of WWTP operators adopting these technologies, in terms of the costs and barriers of installation, running and maintenance, for example. The research should also aim at improving communication and exchange of knowledge between science, industry and policy. **It is essential that projects build on existing and past research in this area.**

Project Structure and Funding:

It is expected to fund **up to one** Large Scale **or a combination of** Medium Scale/Desk Studies projects under this topic – The total budget allocated to **this topic** is €350,000 to €500,000 (which includes a 5% provision for communication costs¹⁴). Please refer to the 2014 Guide for Applicants for further details.

¹⁰ See page 2

¹¹ http://ec.europa.eu/enterprise/policies/raw-materials/files/docs/crm-communication_en.pdf

¹² <http://www.phosphorusplatform.eu>

¹³ <http://www.p-rex.eu/>

¹⁴ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Low energy wastewater treatment processes, including the challenge for smaller wastewater treatment plants*

Project Type: Desk Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 8

Description

A key challenge exists in providing sustainable sewage treatment for the 500+ agglomerations in Ireland serving between 50 and 500 PE (population equivalents) that are currently subject to the Waste Water Discharge Authorisation Regulations (Certificates of Authorisation). A significant number of private wastewater treatment facilities also fall within this range. Solutions tend to focus on a specific mechanical package process with a defined output, rather than a holistic treatment systems approach. In addition, these are not generally designed to be adapted to their environment, weather conditions, seasons and quality/status of the changes in receiving (surface waters/groundwater/coastal waters).

The research under this topic should cover low energy wastewater treatment processes. It is important that the scope of the project is not limited only to constructed wetlands. The research should also consider the challenge of providing sustainable sewage treatment in a more general context such as reduced chemicals, less labour intensive (e.g. un-manned sites, remote monitoring/operation control), less sludge generation, etc., while achieving required effluent emission quality.

Proposals are invited for a research project to undertake the following:

- Collate available best practice internationally;
- Assess applicability in Irish context;
- Develop a selection of models that can be piloted and monitored;
- Based on findings, develop a toolkit for design and implementation of solutions, and develop whole-life cost modelling.

Project Structure and Funding:

It is expected that this project will be a 9-12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs¹⁵). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

¹⁵ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Theme 4: Understanding, Managing and Conserving our Water Resources

Project Title: *Assessing the impact of measures that prevent cattle access to watercourses*

Project Type: **Large-Scale Project**

*To make an application under this topic area, you must use the following **Call Topic Reference**:*

Water 2014 Call - Project 9

Description

The current proposal for a new Rural Development Programme for Ireland envisages a new agri environmental scheme. This scheme is to be known as GLAS (Green Low-Carbon Agri-Environment Scheme). It is expected that up to 50,000 farmers may participate in the scheme over the next six years and it is expected to commence operation in 2015. Participants to the scheme will be obliged to fence all water courses on their holdings where the fields are in grass (where this measure applies to them). This requirement will prevent bovine access to water courses. This measure has the potential to improve the hydromorphological condition of water courses, thereby creating the conditions for ecological quality improvements. As this measure will commence in 2015, the proposed research project should seek to assess the effectiveness of this measure in improving water course conditions, and whether this is giving rise to improved ecological quality. This may involve consideration of water body condition before and after the implementation of the measure.

The proposed research project should review the current state of knowledge and build on existing national and international research. The research should aim at quantifying the effectiveness of the new Green Low-Carbon Agri-Environment Scheme, in this context and, where appropriate, could propose additional strategies to mitigate these impacts. The project could also assess the willingness of landholders to engage in the implementation of the measure and any barriers to its implementation, including financial ones. The research could consider alternatives to allowing bovine access to waters for drinking water purposes, as part of the assessment. These could include, for example, natural alternatives to fencing (e.g. hedging) and novel water provision mechanisms. The proportion of farms, that have flowing or still waters either on or adjacent to their land parcels, should also be quantified, as not all farms have direct access points to surface waters.

Project Structure and Funding:

It is expected to fund **up to one** Large Scale project under this topic – The total budget allocated to **this topic** is €350,000 to €500,000 (which includes a 5% provision for communication costs¹⁶). Please refer to the 2014 Guide for Applicants for further details.

¹⁶ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Development of EFlows*

Project Type: Desk Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 10

Description

Ecological Flows (Eflows) refer to the quantity and timing of water flows (low, medium and high flows) required to sustain and protect the status of aquatic ecosystems, while also promoting sustainable water use. Hydromorphological elements, including the hydrological flow regime, are important elements in the assessment of the ecological status or potential of a water body in relation to the Water Framework Directive (WFD) objectives. Eflows are also necessary when defining the quantitative status of groundwater bodies.

There are numerous methodologies implemented worldwide for the estimation of ecological flows and the approach to the development of flow standards. It is proposed that a literature review be undertaken of the various methods to investigate which methods would be suitable to adopt in the Irish context. It is also proposed that a study be conducted on two catchments to assess the proposed standards, to ensure that an evidence-based approach is utilised in the selection of an Eflow methodology that can be adopted under Irish conditions with measureable indicators. A recommended methodology should be backed up by desk-based investigations (on a small number of catchments), utilising historic flow, ecological and water quality data.

This study will provide a better understanding of methodologies currently in use to develop Eflow standards for rivers and lakes. This is a requirement under the WFD. The hydrological regime is part of the hydromorphological quality elements in the WFD classification of surface water bodies and is used in defining high ecological status across all categories of water bodies (rivers, lakes, transitional waters).

Groundwater is a major component of river flows and lake waters, particularly in dry weather, and provides up to 25% of public and private drinking water supplies nationally. Therefore, a good understanding of recharge to groundwater and of 3-D conceptual models of catchments is required. The existing Geological Survey of Ireland (GSI) recharge map and their conceptual models of groundwater bodies provide a good starting point for considering the groundwater aspects. In addition, the outcomes from the EPA-funded STRIVE "Pathways"¹⁷ provide relevant background information for considering Eflows.

This project will provide an approach and outline methodology to inform the setting of flow standards in Irish rivers. Eflows can also be used as a catchment management tool and therefore relevant stakeholders would also include Inland Fisheries (IFI), National Parks & Wildlife S, Waterways Ireland, Local Authorities, the GSI, the Office of Public Works and Irish Water and the Department of the Environment, Community & Local government (DECLG).

Proposals are invited for a research project to undertake the following:

- A national and international (for example, work carried out in Australia) literature review of the various Eflow standards to investigate which methodology would be suitable to adopt in the Irish context.
- A study on a small number of catchments to assess how ecological flow standards from other jurisdictions could be used in Ireland. This will be used to ensure that an evidence-based approach is used for the selection of an Eflow methodology that can be adopted under Irish conditions with measureable indicators.
- Recommendation for an approach and outline methodology, backed up by investigations utilising historic flow, ecological and water quality data, for setting ecological flow standards in Irish rivers.

¹⁷ <http://www.qub.ac.uk/research-centres/eerc/UsefulLinks/Pathways-EPASTRIVEProject/>

Project Structure and Funding:

It is expected that this project will be a 9-12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs¹⁸). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

¹⁸ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Towards integrated water management*

Project Type: Desk Study

To make an application under this topic area, you must use the following **Call Topic Reference:**

Water 2014 Call - Project 11

Integrated water resource management is defined as “a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” (Global Water Partnership¹⁹).

Proposals are invited for a research project to look at the solutions to promote integrated water management, looking into “bottom-up” approaches to integrated catchment management. It is essential that the proposed research builds on existing national and international research. Strategies for engaging and motivating Irish local communities to be more involved in water management, and the cost-benefits of such an approach should also be considered.

Project Structure and Funding:

It is expected that this project will be a 9-12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs²⁰). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

¹⁹ <http://www.gwp.org/The-Challenge/What-is-IWRM/>

²⁰ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Project Title: *Development of Options for managing Drinking Water Abstractions*

Project Type: Desk Study

*To make an application under this topic area, you must use the following **Call Topic Reference:***

Water 2014 Call - Project 12

Description

The Water Framework Directive (WFD) envisages full cost recovery for water services. This includes the abstraction and use of water resources. Much of the policy approach underpinning this policy direction has been developed in the context of the Commission work in the area of Water Scarcity and Droughts. This is outlined in the following documents:

- "Addressing the challenge of water scarcity and droughts" European Commission adopted in 2007 [COM(2007)414], and
- Report on the Review of the European Water Scarcity and Droughts Policy (Com (2012) 672, 14/11/2012).

Ireland has an abundance of water resources, although recent predictions suggest that certain areas (in particular the greater Dublin area) will be under stress.

Proposals are invited for a research project to undertake the following:

- Review all available research and guidance prepared by the European Commission on evaluating sustainable water abstraction.
- Evaluate the guidance and how it pertains to the Irish Situation.
- Based on these reviews and evaluations, propose options for managing abstractions in the Irish context.
- The research project will consider in particular drinking water abstractions. The project should examine other abstraction control mechanisms in use in other member states and comment on their relevance to Ireland with regard to best practice.
- A review of financial charges for water abstraction and how these are derived will also form part of the above review.

Project Structure and Funding:

It is expected that this project will be a 9-12-month Desk Study project with a budget of up to €75,000 (which includes a 5% provision for communication costs²¹). Please refer to the 2014 Guide for Applicants for further details. There will be **up to one** project funded under this topic.

3. Expected Outputs

For all projects submitted under the 2014 Water Call, expected outputs include:

- **Final Report**, which should provide a clear and detailed account of all the steps and methodologies used during the project and ensure that the objectives, set out above, are met – including recommendations.
- **Synthesis Report** (20-30pp), which provide a clear non-technical summary of the research and of the recommendations.
- **Dissemination 2-pager**, which will be used to disseminate the findings of the research to the key stakeholders.
- **Workshop/Dissemination event(s)** to all stakeholders in the relevant arena (e.g. policy, monitoring, regulatory, NGOs, media, public, etc.).

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained, presenting the project and work carried to-date. It is also expected that a number of dissemination outputs, such as policy briefs, peer-reviewed publications and presentations, will arise from the projects.

It is essential that applicants clearly demonstrate, in their proposal, the policy-relevance of the outputs of their proposed research; the applicability of their findings; and how these outputs address a knowledge-gap and can be efficiently transferred/applied to the implementation of water-related policies and the protection of our water resources.

4. Indicative Timeframe

27th June 2014	Announcement of funding opportunity via national newspapers, EPA website and College Research Officers, HEANET & ESAI list server.
5pm, 5th August 2014	Deadline for submission of applications by applicants
5pm, 15th August 2014	Organisation Approval Deadline for authorisation by Research Offices.
Mid-August/September 2014	Evaluation Process
September/October 2014	Negotiation ²²
October/November 2014	Grant Award of Successful Projects

5. Further Information

Information on current research projects being supported by the programme is available in the Research Section of the EPA web site (www.epa.ie/researchandeducation/research). Alternatively, for further information on this call, please contact research@epa.ie.

²² The EPA may consider calling the shortlisted applicants for interview at this stage.