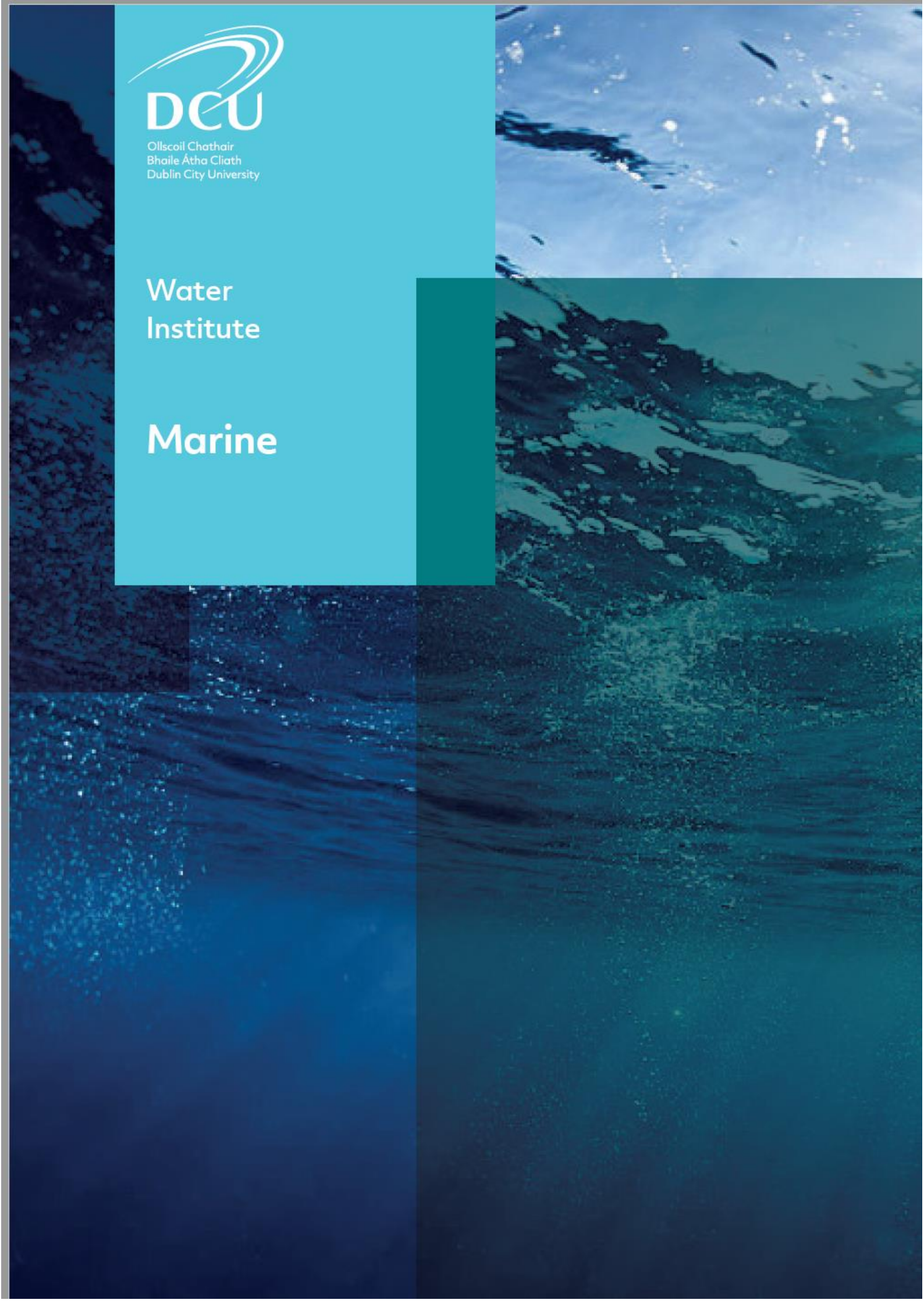




Ollscoil Chathair
Bhaile Átha Cliath
Dublin City University

Water
Institute

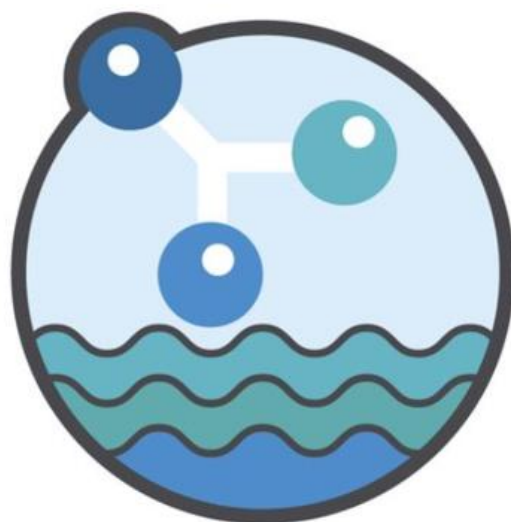
Marine



Knowledge Transfer Report

(Interim)

Project Title:
**Irish Marine Screening and Assessment of
Emerging Contaminants In Coastal and
Transitional Environments**



I-SECURE

Synopsis:

This project evaluates the **sources and occurrence of contaminants of emerging concern (CECs)** within marine coastal and transitional waters around Ireland. Results will help to develop new regulations and policies for the protection of marine environments and identify areas of concern.



L-R Bianca Lespine, Dr. Belinda Huerta, Adrian Delgado collecting passive samplers at Poolbeg, Dublin.

Abstract

The **I-SECURE** project (Irish Marine Screening and Assessment of Emerging Contaminants in Coastal and Transitional Environments) is carried out with the support of the Marine Institute under the Marine Research Programme. The aim of the project was to address the current lack of cost-effective methods for the detection of low-concentration CECs in marine environments. These advanced technologies grant a significant increase in CEC detection, constituting an essential step in conducting analyses in Irish water. The project aims for the development of new regulations and policies to protect the marine environment while also identifying coastal geographical areas of concern to be targeted for future investigation.

Overall Impact of I-SECURE

- Generating novel data and new compound information on the occurrence and fate of emerging contaminants in transitional and coastal waters by developing novel technologies and field studies for risk-selected coastal and transitional locations.
- Investigating the impact of emerging contaminants on marine biota, from shellfish to top predators.
- Prioritizing monitoring locations and contaminant groups by combining chemical screening and toxicology data in support of national policy objectives and international best practices (e.g. OSPAR, NORMAN).
- Identifying risk-based approaches for marine monitoring in areas of concern and proposing further investigation.
- Support new legislation regarding coastal and transitional waters.
- Promote dissemination of information about the occurrence chemicals of emerging concern within Irish waters to the public.

Knowledge Need

Contaminants of emerging concern reach the marine environment directly and from land-based sources. These compounds cause toxicological effects in a range of systemic endpoints (e.g., endocrine disruption, immunotoxicity and neurotoxicity). They may be persistent and liable to accumulate in organisms and the aquatic food web. However, their distribution and fate within the environment and their potential to cause acute effects remain largely unresolved.

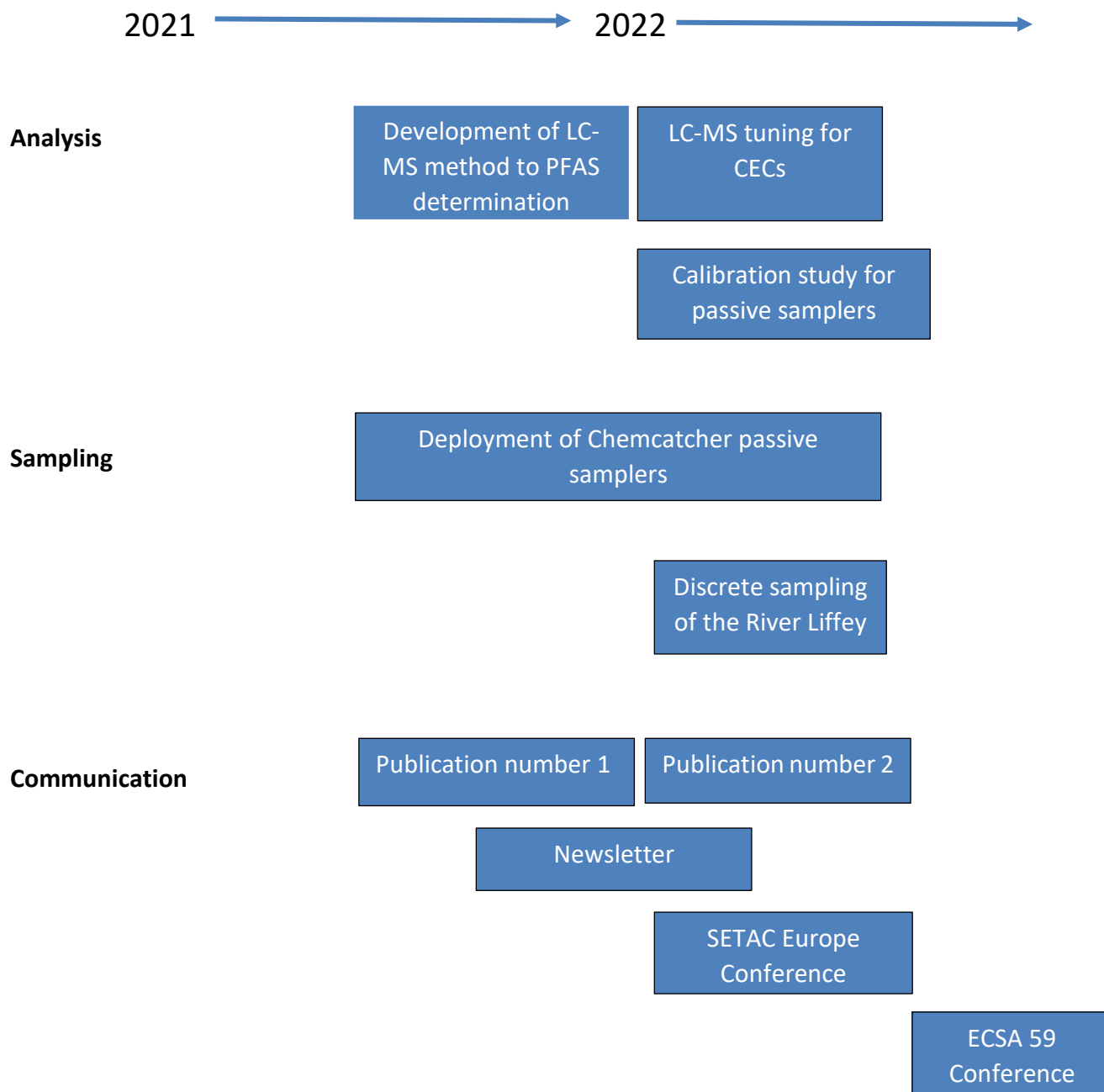
Knowledge Output

The I-SECURE project has achieved numerous scientific and technical results throughout its first two years. Key outputs of this project include:

- Development of novel analytical technology (LC-MS) for target analysis (i.e., pharmaceuticals, pesticides, PFAS);
- Comprehensive specialized sampling techniques for low contaminant concentrations consisting of passive samplers and water;
- Enhancing the capability to generate marine data on CECs in marine waters in order to identify locations of concern for future research;
- Novel and extensive data on the presence of CECs within the Irish Marine environment;
- Dissemination of project findings through appropriate channels (conferences, publications).

Knowledge Transfer Act and Target Users

The target users are the stakeholders including individuals, governmental agencies (e.g., Marine Institute), and industrial (e.g. aquafarming). Potential end-users and future stakeholders are targeted through the attendance and dissemination of project representatives, including the publication of one newsletter, two conference presentations, and two scientific publications (with a further two in preparation for the end of 2022).



Mapping Sites

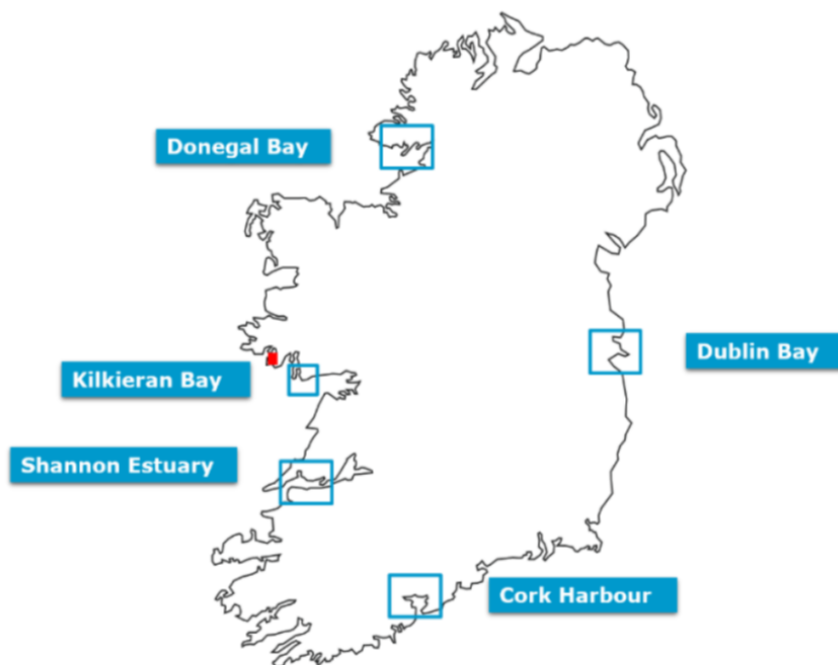


Figure depicting the map of passive sampling sites as of June 2022

Knowledge Output Pathway

Measured Impact

The measured impact of this project was determined by the number of assets produced throughout the project.

Firstly, passive and spot samplers were deployed throughout various locations for data collection and dynamic passive samples are planned for 2023.

Secondly, an LC-MS technique tuned for CECs was developed, including the publication of the paper: “Development and application of an LC-MS method to the determination of poly- and perfluoroalkyl substances (PFASs) in drinking, sea, and surface water samples”.

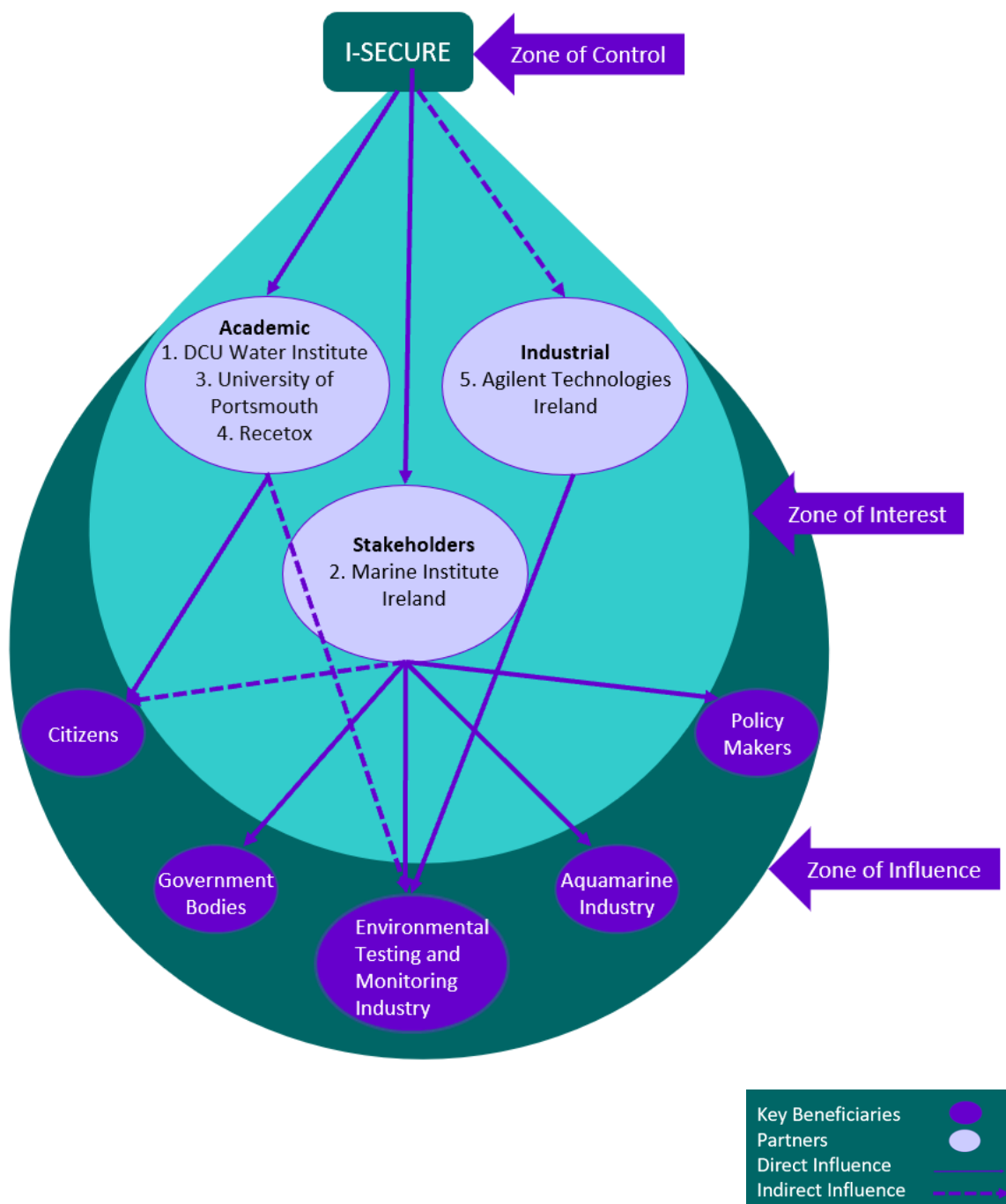
A calibration study for passive samplers was executed.

A data management plan has been established and enabled.

The dissemination of project findings and progress to the public was achieved through the project website and issuing of newsletters.

Next steps

At this stage in the project, an individual, project-specific 'Key Beneficiaries Impact Assessment' was performed, thereby allowing successful knowledge transfer and avenues of collaboration can be fully investigated in the coming two years. This is outlined in the figure below:



Project Funding

Funded by the Marine Institute Ireland through the Marine Research Programme 2014-2020 (€399,615).

Project ID: PDOC/19/03/02 **Start Date:** 1st January 2021 **Duration:** 4 years

Consortium Management Leader

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Social Media

Twitter: @isecure_project

Website: <https://dcuwater.ie/projects/i-secure/>

Final project report available at: not yet applicable as the project is still in progress.

Key Dissemination Elements

1. Monitoring of emerging contaminants of concern in the aquatic environment: a review of studies showing the application of effect-based measures

(<https://pubs.rsc.org/en/content/articlelanding/2021/ay/d1ay01184g>)

2. Development and application of an LC-MS method to the determination of poly- and perfluoroalkyl substances (PFASs) in drinking, sea, and surface water samples



(<https://pubs.rsc.org/en/content/articlelanding/2022/AY/D2AY00300G>)

Project Newsletter:

[https://us1.campaign-archive.com/?e= test_email &u=b49899e0e8091b50132196c74&id=f0bc8fae37](https://us1.campaign-archive.com/?e=test_email&u=b49899e0e8091b50132196c74&id=f0bc8fae37)

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