

CEA within Carlingford Lough, a transboundary sea lough

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Agri-Food and Biosciences Institute (AFBI)

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SIMAtlantic Final Conference Session 3A

CEA within Carlingford Lough a transboundary Sea Lough.

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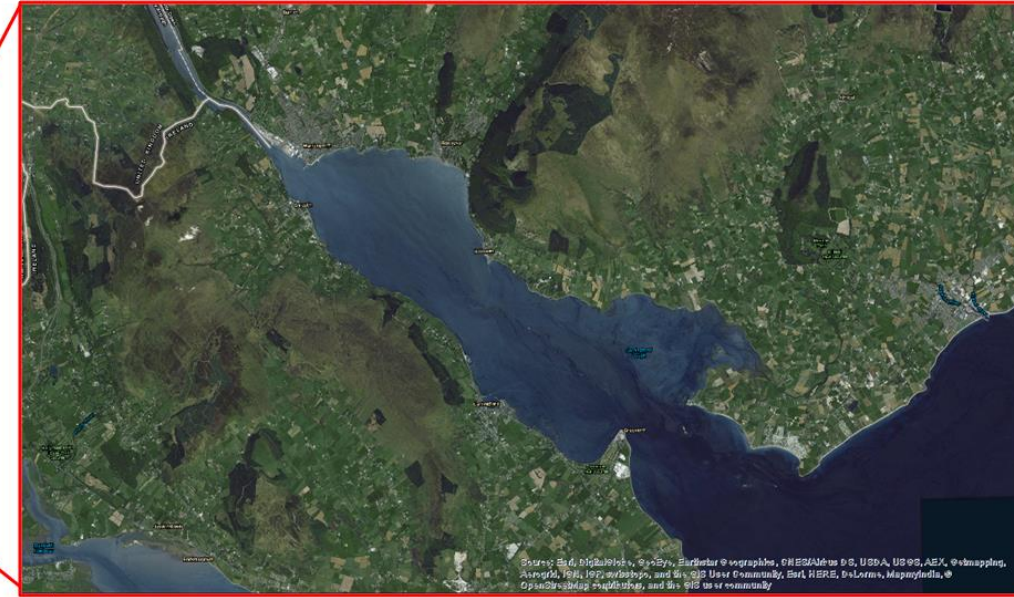
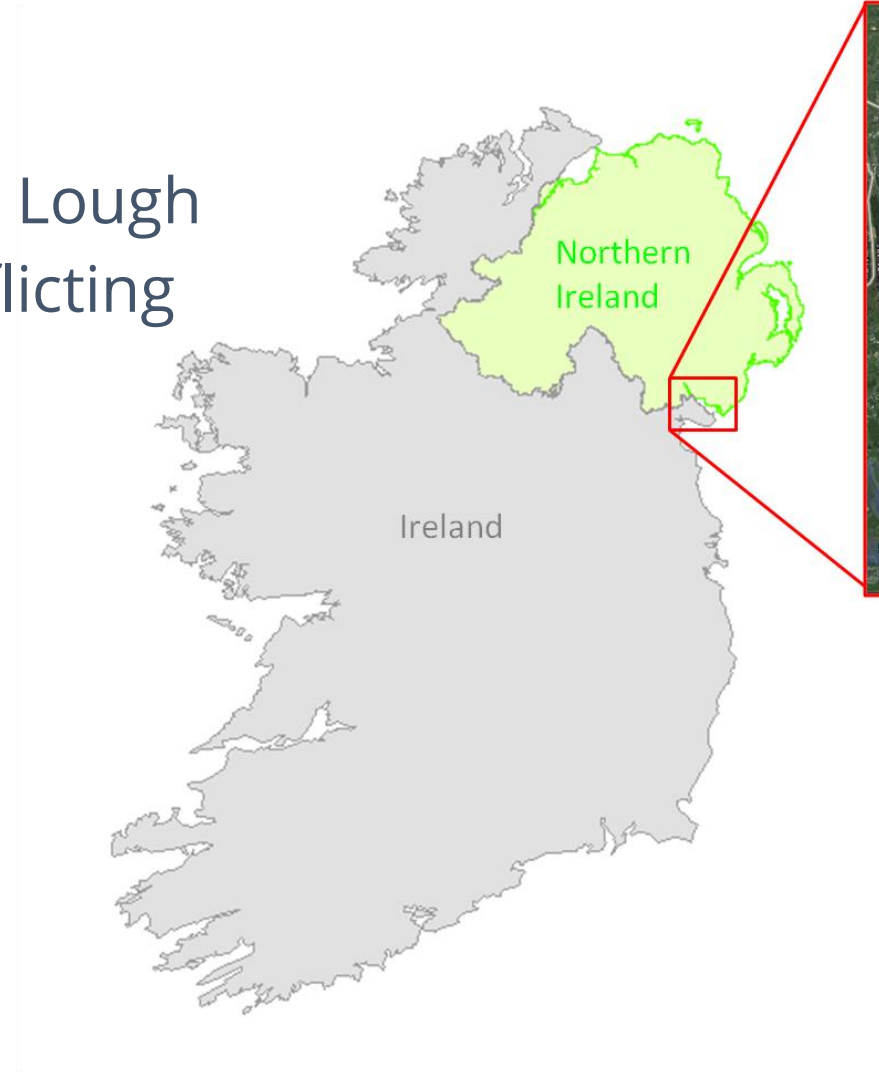
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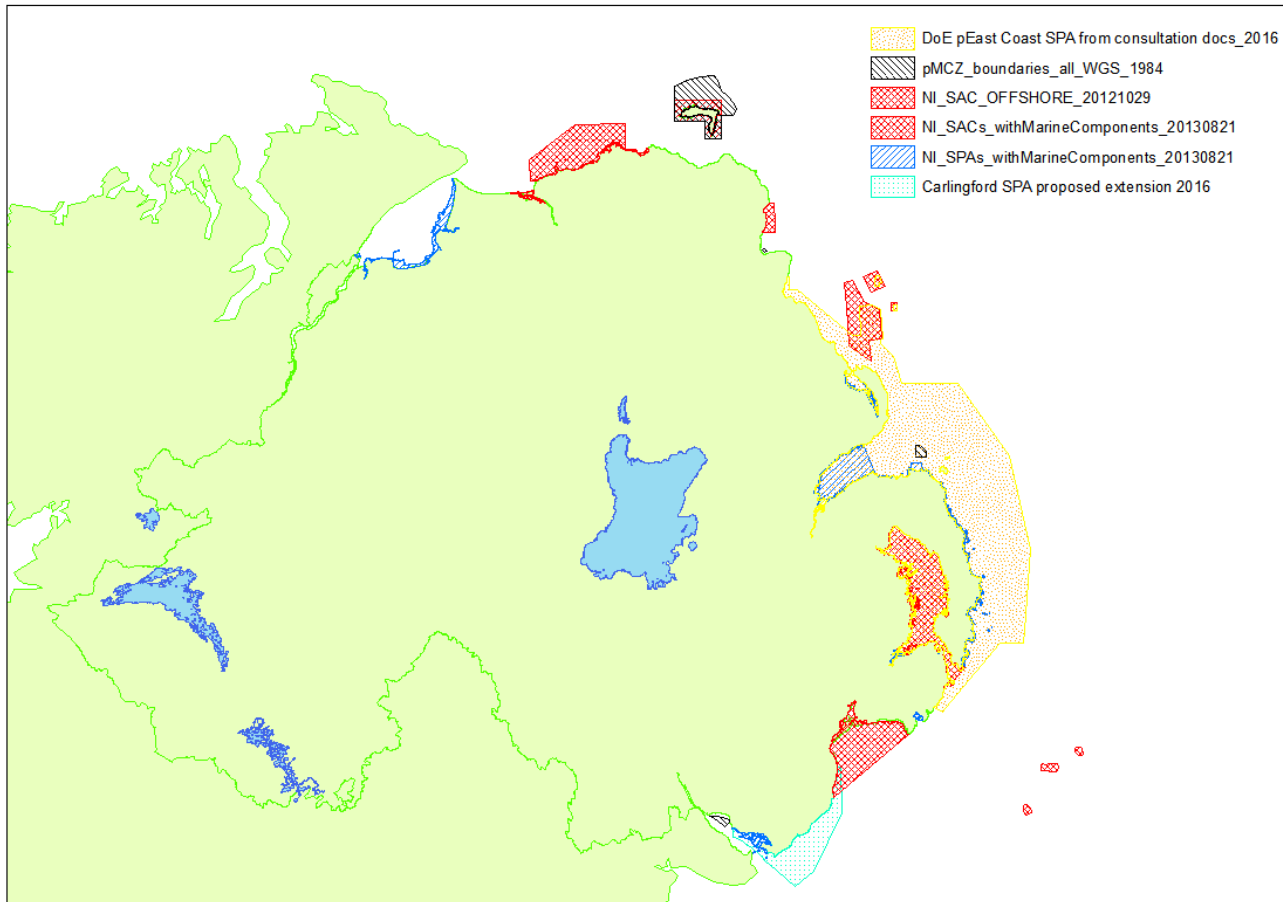


Carlingford Lough

- Trans-boundary sea Lough
- Wide variety of conflicting users



Cumulative Impact Assessment



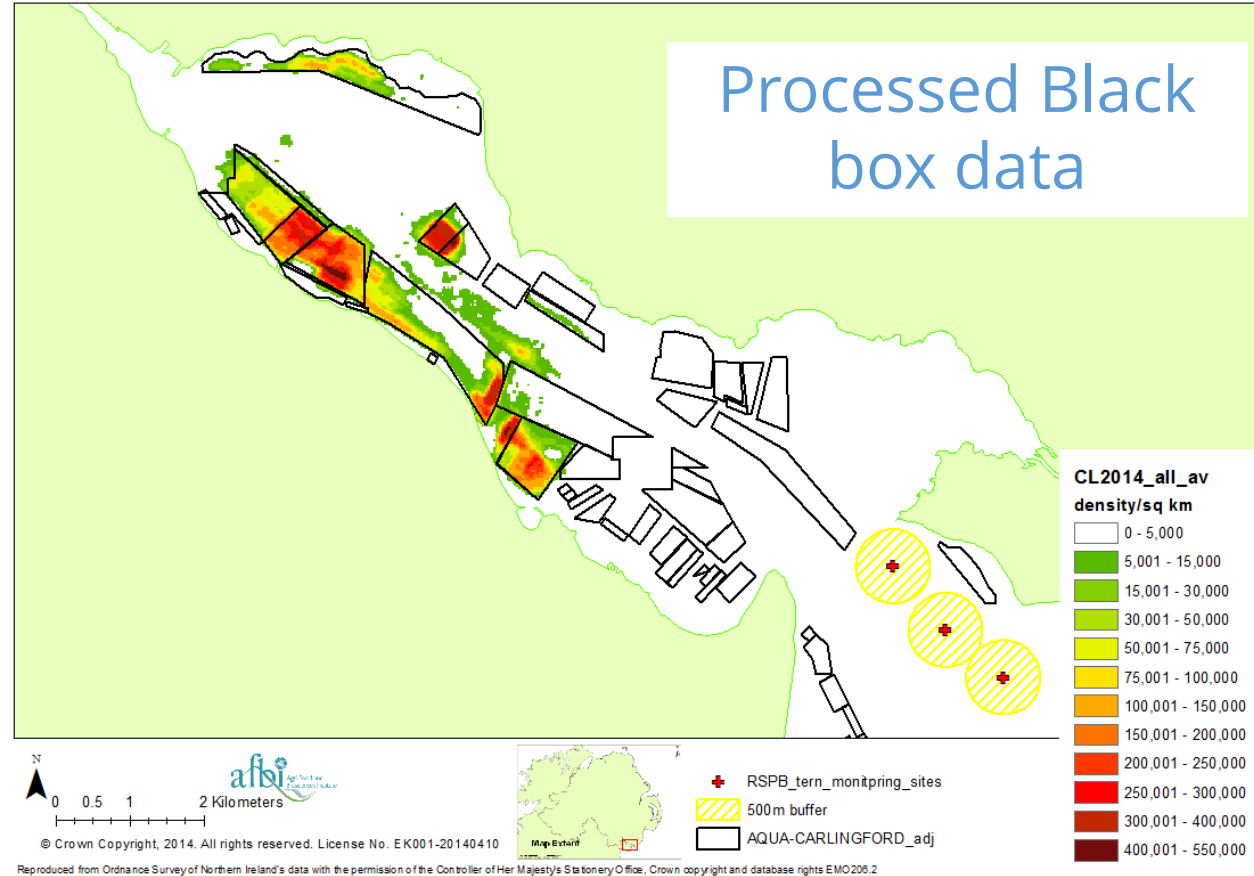
European Council Directive 92/43/EEC (**Habitats Directive**) and European Council Directive 2009/147/EC (**Birds Directives**) were developed with the aims of **protecting habitats and species** considered to be of European interest.

Habitats and Birds Directives brought into effect in Northern Ireland law by **The Conservation (Natural Habitats, etc.) (Amendment) (Northern Ireland) (EU Exit) Regulations 2018**

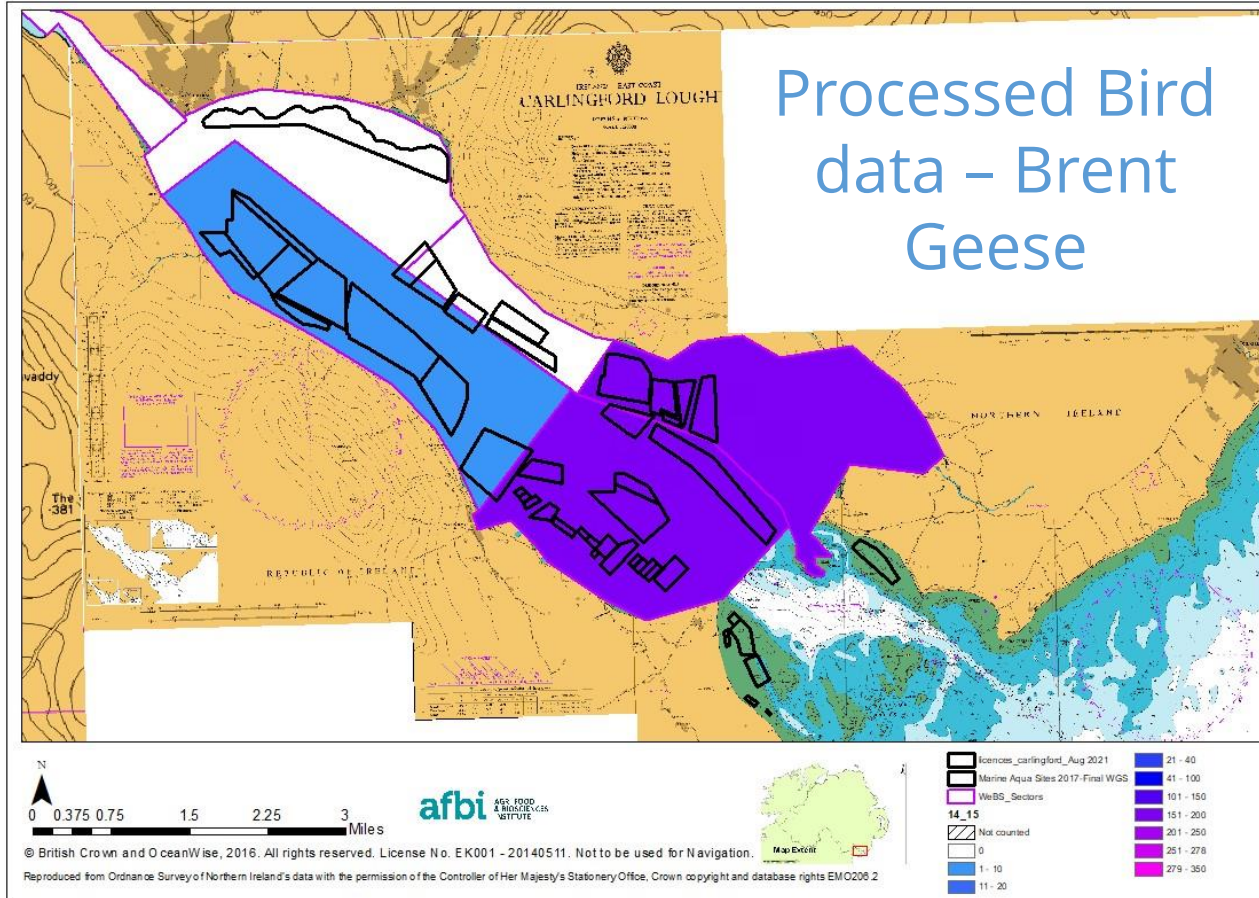


Cumulative Impact Assessment

Processed Black box data

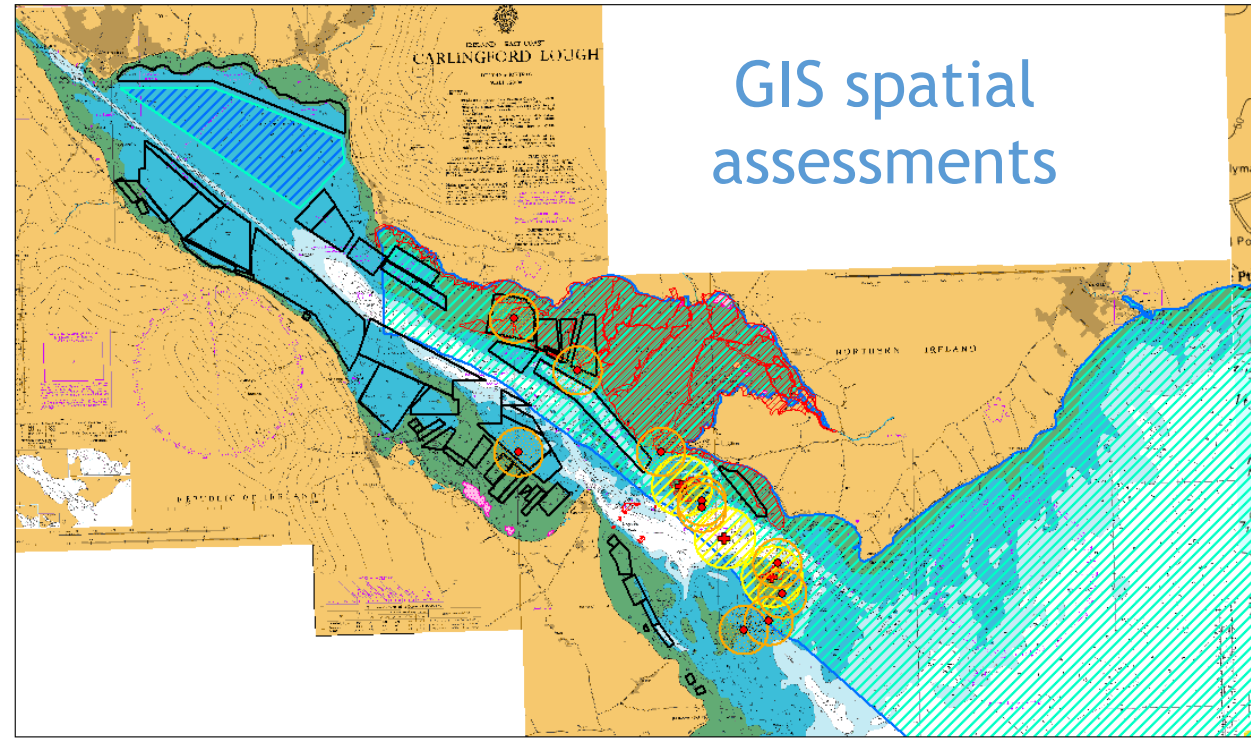


Processed Bird data - Brent Geese



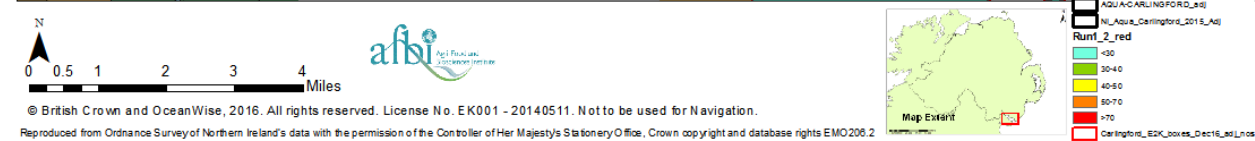
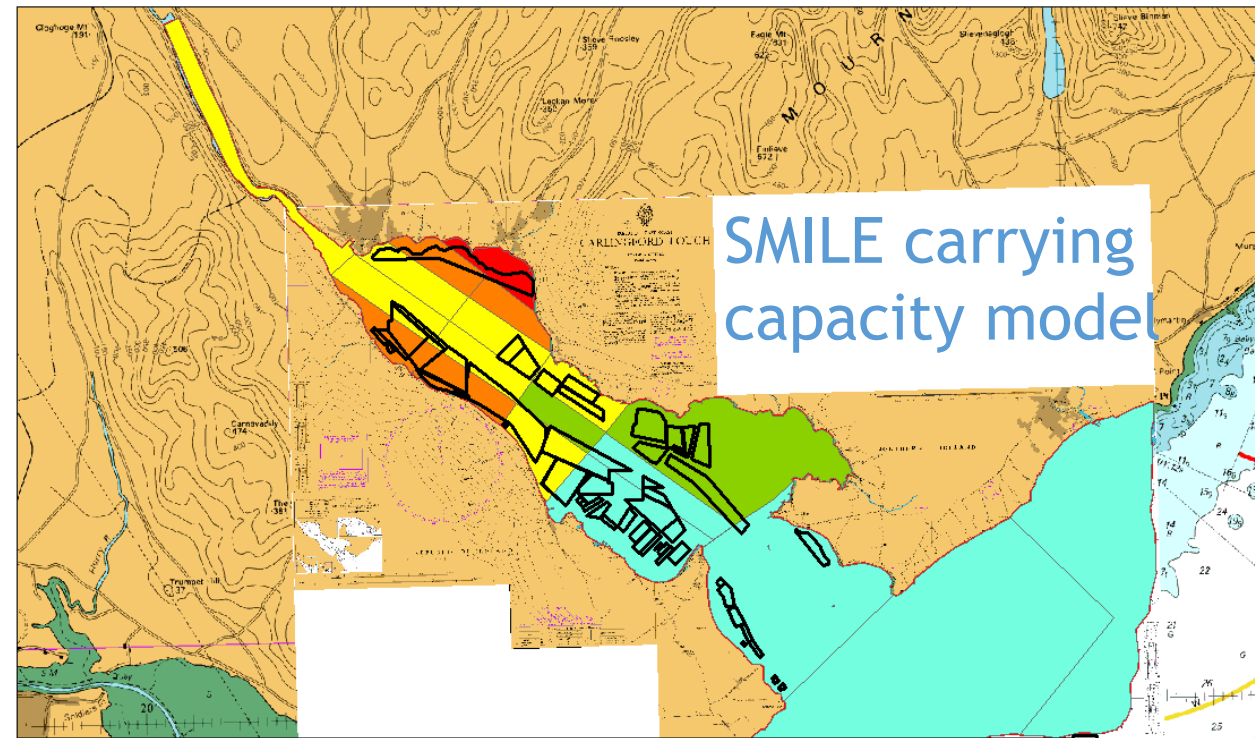
Cumulative Impact Assessment

GIS spatial assessments



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SMILE carrying capacity model



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AquaSpace Project



Ecosystem Approach to making Space for Aquaculture



UNIVERSITY OF CRETE

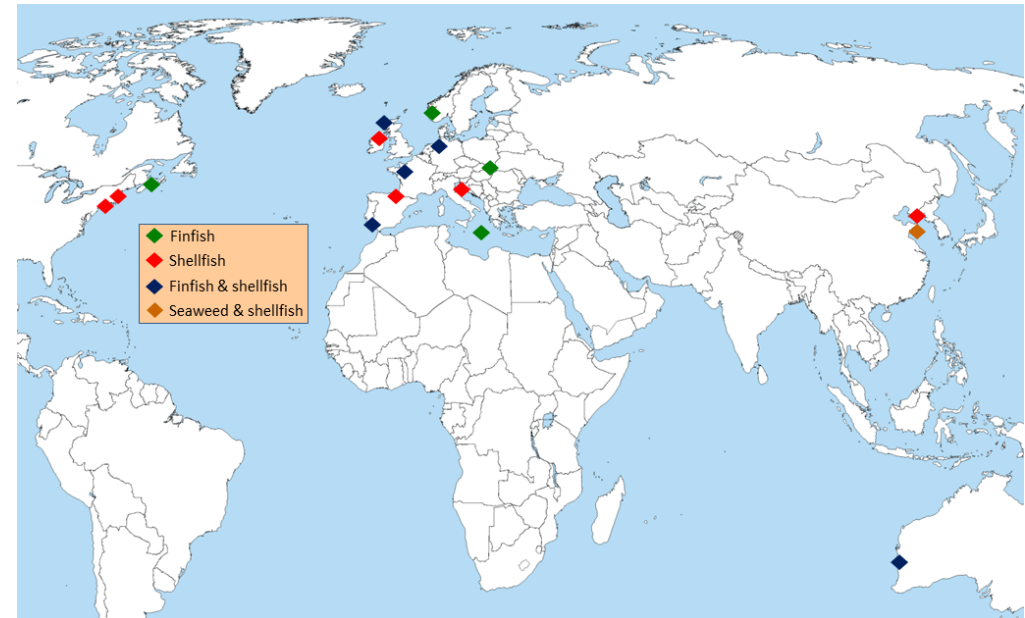


THE UNIVERSITY OF WESTERN AUSTRALIA



NARIC

21 partners, €3M, 2015-2018








AkvaVis Demonstrator model – Carlingford Lough

- Based on GIS, processes data relating to aquaculture management
- Performs suitability analysis on proposed aquaculture areas through the utilisation of a series of indicators

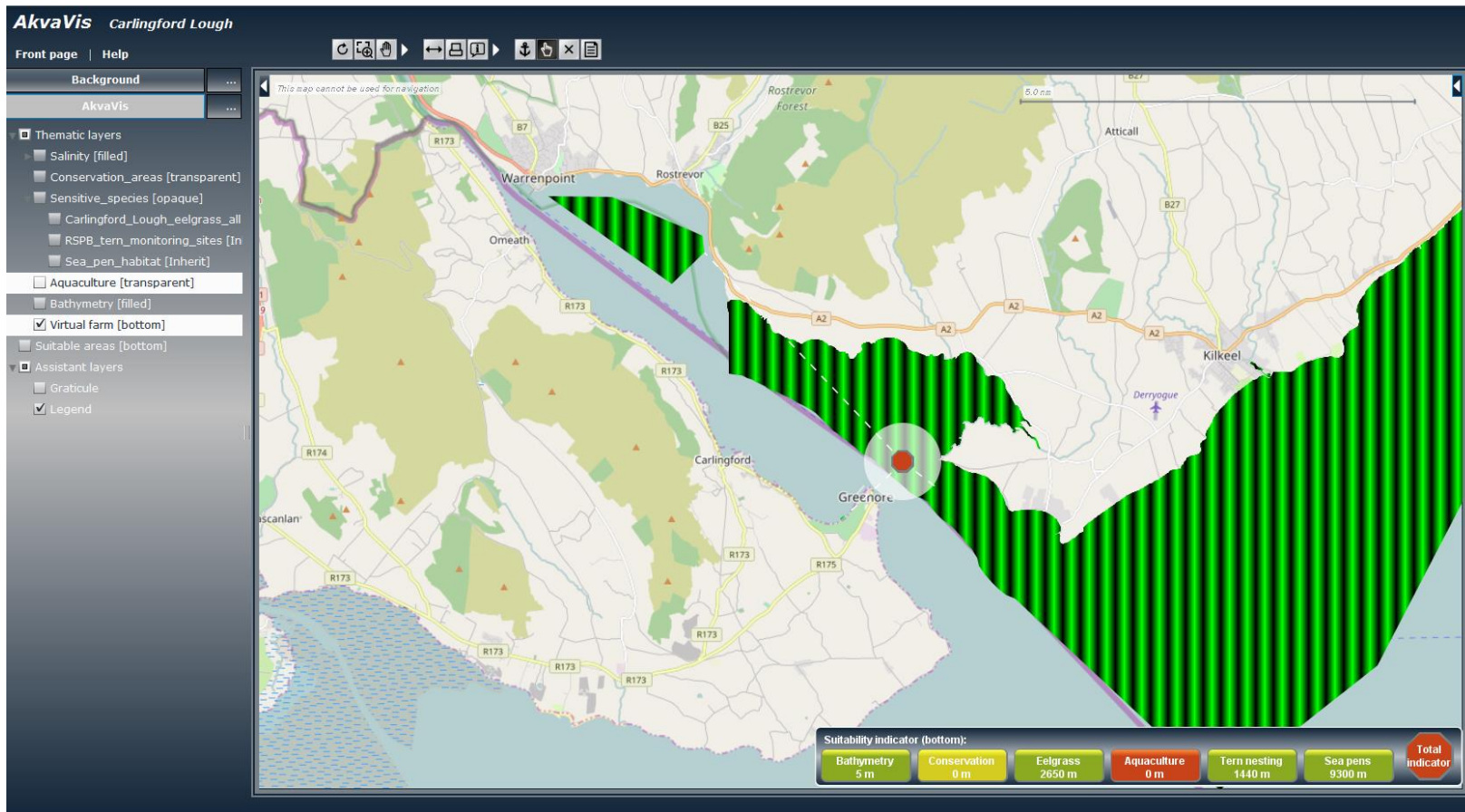
- ✓ **Aquaculture suitability**
- ✓ **Site selection**
- ✓ **Marine Spatial Planning**
- ✓ **Web based**
- ✓ **User friendly**
- ✓ **Decision support tool for Government Bodies**

AkvaVis Carlingford Lough
Decision Support for Aquaculture Management



AkvaVis Demonstrator model – Carlingford Lough



Web-based public decision support tool for integrated planning and management in aquaculture

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 Stakeholder consultation
 Indicators

ABSTRACT

The development of spatial planning and management approaches is required to increase the space available for aquaculture production and to support the increasing global demand for food resources. During a European funded project, a large consultation exercise highlighted that stakeholder involvement is a necessity for successful planning and must be a continuous process as part of the development of a decision-making tool. In this study we present a decision support tool built on a web based dynamic interface to Geographic Information Systems which facilitates access to information related to site selection, environmental interactions and management in aquaculture. It is derived from the AkvaVis concept and uses interactive functions that instantly display the results of spatial parameters chosen by the user. We adapted the tool for use within four case studies which deal with very different scales of aquaculture and issues related to aquaculture in four different countries. The key strengths of our tools relate to their capacity to manage and display spatial data from different sources in a transparent way, the ability to use and display a series of built-in indicators, and the long-term development potential made possible by the maintenance strategy of the tools, services and data repository. Consultations and meetings provided an accurate view of stakeholder expectations as well as feedback on the tool development and applicability, therefore helping the tool to meet the prerequisite for operational decision-making tools.

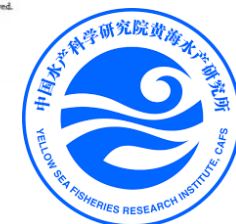
1. Introduction

Aquaculture is expected to be a key solution to the anticipated increased contribution from the marine environment to the future global demand for food resources (GAPRA, 2017). Such an endeavor will require the development of adapted approaches to planning and management at local, regional and transnational levels. Aquaculture production depends on the local environment as well as social, regulatory and economic constraints, which are often poorly understood and not fully considered (Dionne, 2002). As outlined by Gomez et al. (2018), the combination of these factors can make the difference between a successful or unsuccessful initiative. The difficulty in implementing effective aquaculture development plans stems from a lack of available information and data on the suitability and availability of space, which has led to the aquaculture sector growing slower than expected in many

regions (Brugere et al., 2010). Høthner et al. (2015) recently found that most of the European (EU) finfish production by volume covers a total of 650 ha, with aquaculture only occupying 3% of EU coastline. They presented evidence that competition for space at a local level with other economic activities, such as tourism, limited growth. Terry et al. (2015) estimated that a very small portion of the Gulf of Maine had space characterized as low use that would permit aquaculture siting and suggested that cooperation with existing users will be necessary to support aquaculture expansion. Hestrovig (2013) demonstrated how competition for space in Norway acts within a complex management framework at national, regional and local levels. For example, the technological developments that have facilitated the relocation of salmon farms to more exposed and productive sites have resulted in a decrease in number of sites from almost 3000 in 1999 to below 1000 in 2011. Nevertheless, competition for space with other users has

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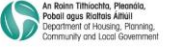
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Ecosystem Based Management

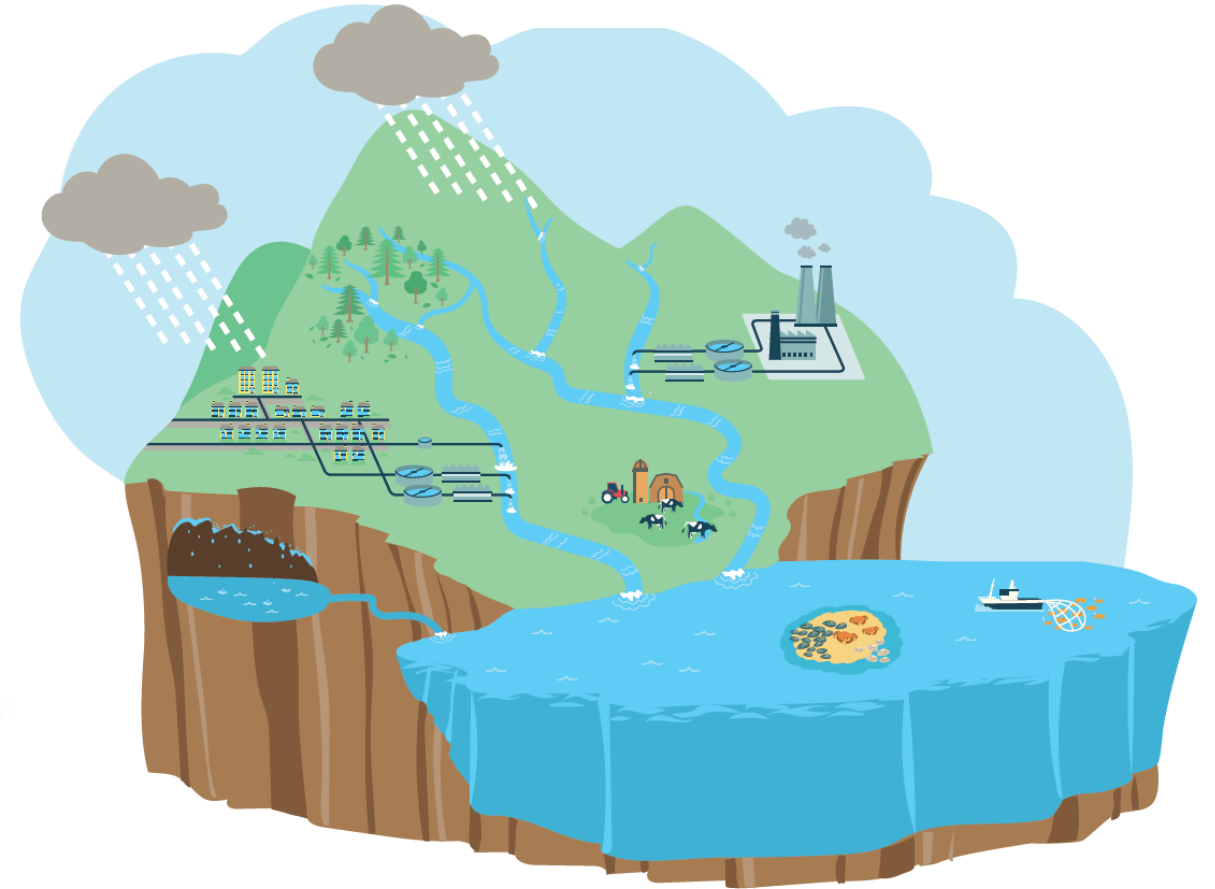


MATCH FUNDERS



Shared Waters Enhancement and Loughs Legacy - SWELL

€35million EU-Funded project which aims to improve water quality in Carlingford Lough and Lough Foyle through the upgrade of Water Utility wastewater facilities



SWELL PARTNERS



The SWELL project is supported by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body (SEUPB).



ECOSYSTEM MODELLING

MATCH FUNDERS



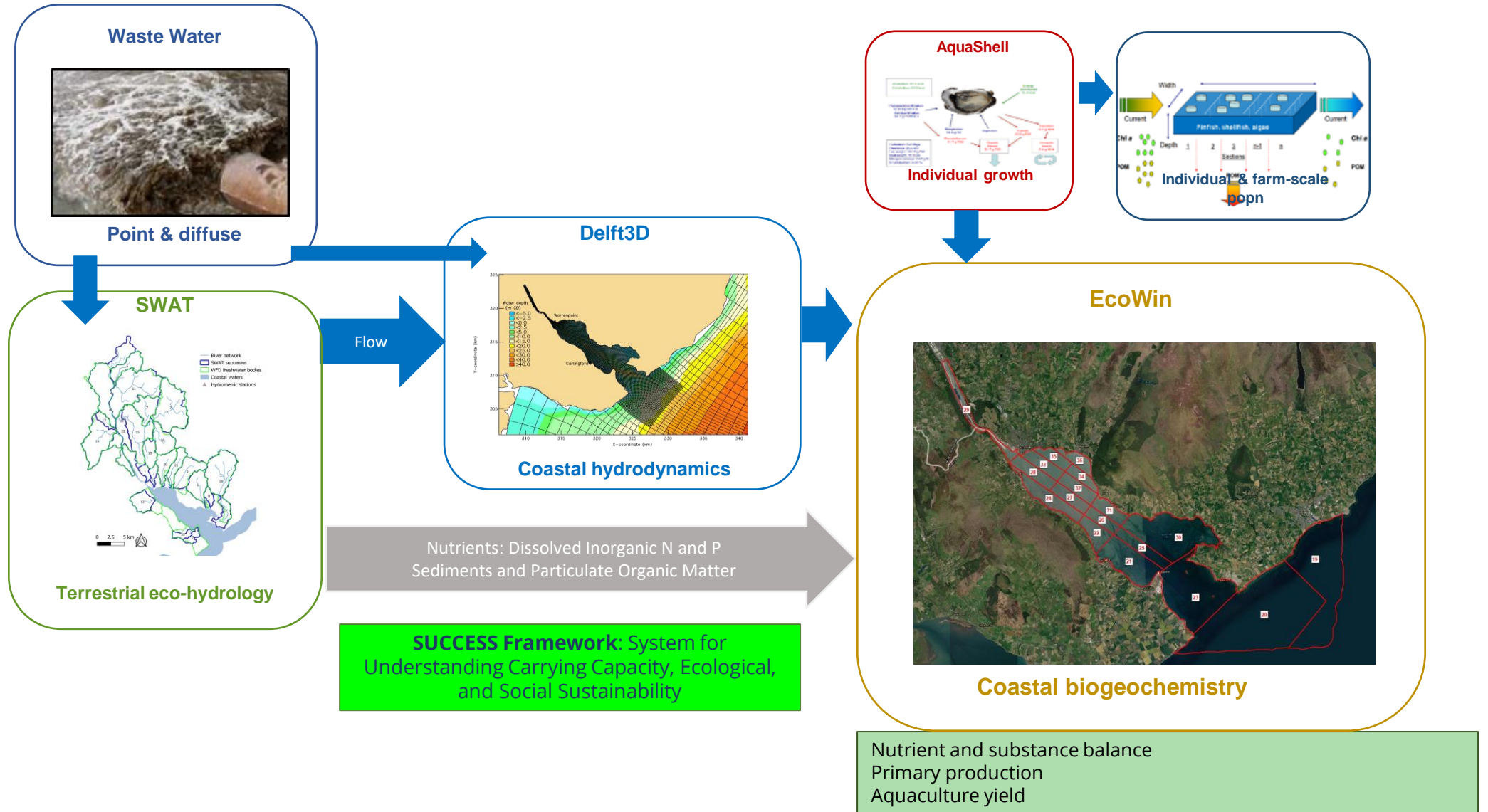
www.swellproject.com

This project has been supported by the European Union's INTERREG VA Programme, managed by the Special EU Programmes Body (SEUPB).

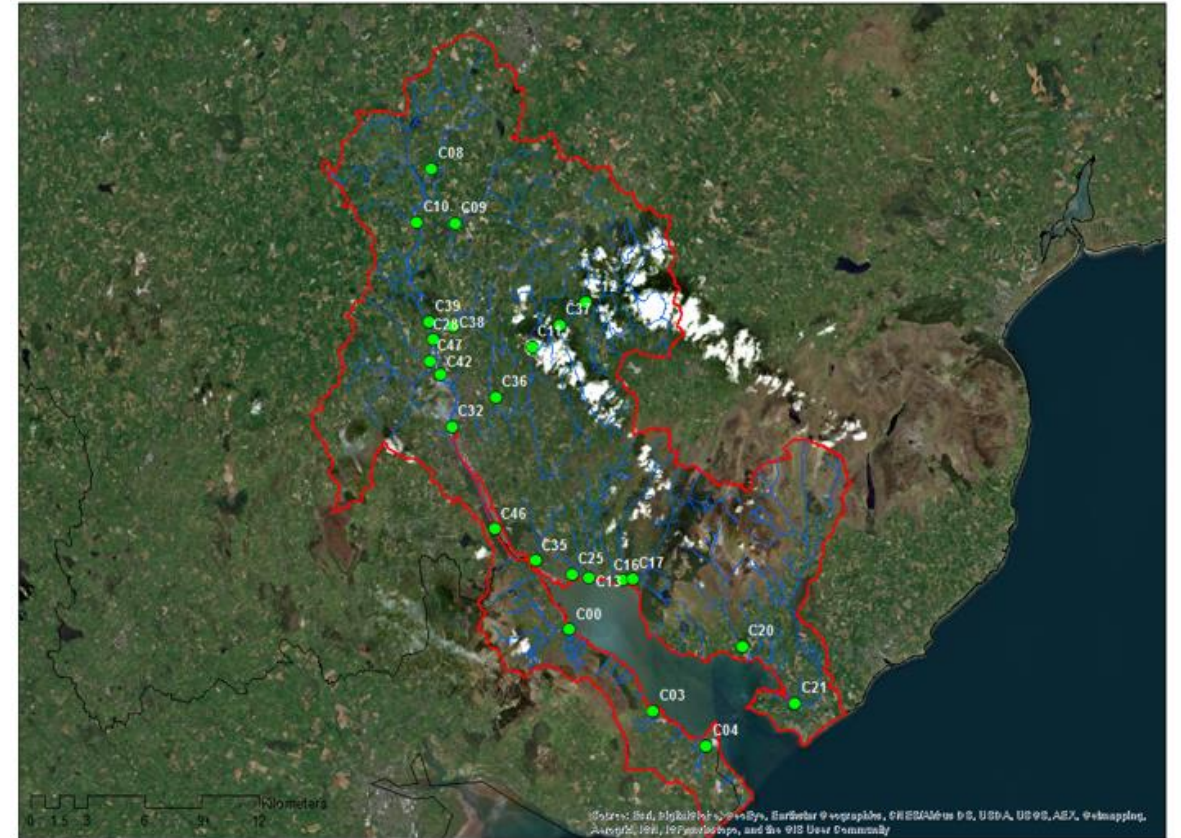
SWELL PARTNERS



Multi-model cascade



Extensive sampling programme



Legacy Model Uses



- Ecosystem Based Management
- Identify sources of pollution
- Promote evidence-based decision making
- Help water utilities to target capital spend most effectively
- Help the regulators to set consent standards
- Model impacts of future shifts in climate change and land-use management techniques (i.e. farming, forestry)





Thank you

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