



DRAFT

Working Paper V

Dublin Bay – A Case Study

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THE IMMERSE PROJECT

Integrated Management and Monitoring of Estuarine and Coastal Ecosystems (IMMERSE), is a research project aimed at informing an Integrated Environmental Management and Monitoring system (EMMS) for Irish estuarine and coastal ecosystems. It is funded by the Irish Environmental Protection Agency's Research Programme (grant no. 2013-B-PhD-11). The methodology for the EMMS will be applicable on a national scale, and will aim to align with the requirements of the Water Framework, Marine Strategy Framework, Habitats, Birds and Floods Directives.

The specific objectives of the project are to:

- Review the current environmental pressures on Irish estuarine ecosystems based on existing regulatory data and academic research and identify possible conflicts;
- Develop a matrix of regulatory compliance requirements based on current domestic and European legislation and policy targets and analyse their spatial implications for Irish estuaries;
- Based on international best practice, develop a proposed framework for the management and monitoring of Irish estuarine ecosystems;
- Develop a SMART analysis of two selected case studies of Irish estuary ecosystems;
- Explore the opportunities and constraints of implementing the proposed framework of EMMS developed above in the context of the two selected case studies;
- Develop a definitive framework for Ireland; and
- Develop a user interface and dissemination strategy for the project findings, including, *inter alia*, academic papers, conference presentations and a GIS-interface.

The project is being taken forward in three key stages:

1) *Developing a proposed framework of EMMS*, which involves reviewing international models of best practice in integrated estuarine management including an appraisal of relevant legislative and regulatory requirements for their sustainable management;

2) *Data Gathering and User Engagement*, based on two case study areas, the Shannon Estuary and Dublin Bay; and

3) *Analysis, Synthesis and Dissemination*, including a performance analysis of the proposed framework of EMMS based on the case studies. This will conclude in the development of an appropriate EMMS template which can be applied in any Irish estuarine context.

[Working Paper I \(Integrated Environmental Management: A Review of the Concept\)](#) highlighted that although the concept of Integrated Environmental Management (IEM) has been discussed at length in an academic context, there is limited engagement on 'how' to implement such an approach in practice, particularly in relation to estuarine and coastal environments. [Working Paper II](#) emphasised the current and overly complex legislative and regulatory context underpinning the management of the marine environment. In Ireland, the approach so far to estuarine, coastal and marine management has been fragmented and mainly sectoral. However, with policy becoming more integrated at a European level, there is potential for the Irish Government to endorse a more holistic

approach with the emergence of new coastal and marine legislation under the MSP Directive and the pending Draft Foreshore Bill.

IMMERSE seeks to address the gap in the literature between theory and practice by devising a conceptual framework based on a critical review of related concepts, principles, processes, governance structures and by assessing how IEM is practiced in other international examples.

By building on the findings of Working Papers I and II, an idealised framework of integrated environmental management and monitoring for estuarine and coastal ecosystems (EMMS) was developed and described in [Working Paper III \(Development of the IMMERSE proposed framework of EMMS\)](#). This concluded Stage 1 of the research.

The next stage of the project (Stage 2: *Data Gathering and User Engagement*) involves presenting the proposed framework of EMMS to the critical evaluation of stakeholders within the two case studies (i.e. the Shannon Estuary and Dublin Bay). This aspect of the research involved close working with members of the project Steering Group, case study working groups and national, regional and local stakeholders involved in estuarine and coastal management in the Shannon and Dublin Bay.

The purpose of this document, Working Paper V (*Dublin Bay – A Case Study*), is to reflect upon the experience and lessons learned of applying the proposed framework of EMMS within Dublin Bay among potential future users.

The main objectives of Working Paper V are to provide the following:

- An overall account of the workshop proceedings and key emerging themes in terms of estuary management;
- A summary of stakeholders' feedback and critique of how the proposed framework performed when applied within the context of Dublin Bay; and
- An overview of benefits and constraints of the framework as well as possible challenges to its future use and make suggestions on how such challenges might be overcome.

The participation of key stakeholders in the workshop contributed to an overall SWOT analysis of this first version of the framework, which was also applied within a Shannon Estuary context and reported in the preceding Working Paper IV (*The Shannon Estuary – A Case Study*). These findings will form the basis of the next and final stage of the research: *Stage 3: Analysis, Synthesis and Dissemination*. This final stage will reflect on the experience of applying the proposed framework of EMMS amongst the Shannon Estuary and Dublin Bay stakeholders, carrying out an in-depth analysis of the workshop data recordings and devising an iteration best suited to the Irish context. Working Paper VI will conclude by making recommendations which can be replicated on an island-wide basis.

Working Paper V is therefore an initial description of the Dublin Bay workshop. A more detailed analysis of the Shannon Estuary and Dublin Bay case studies will follow in the final working paper. Further information on the IMMERSE project is available on the project website:

<http://bit.ly/IMMERSE> and on *Twitter@IMMERSE14*

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1. Introduction

Estuaries and coasts are important ecologically, economically and socially. They are amongst the most productive natural habitats in the world; have traditionally been important places of navigation; their land banks are prime locations for urban development; and historically, have been important areas for fishing and recreational activities. In more recent times, however, population growth, food and energy requirements, increased economic activity and resource intensive lifestyles are resulting in unprecedented levels of demand for coastal and marine resources.

Given their important natural features, and the demands placed on them by human activities, estuarine and coastal resources must be managed in a way that facilitates sustainable development. Furthermore, it is important to acknowledge that it is not possible to plan and manage marine ecosystems or components of ecosystems, and that only human activities are 'manageable' (Ehler & Douvère, 2009).

As IMMERSE has reported to date, multiple human activities affect both the land and coastal environment, however current management primarily considers activities in isolation such as fishing, conservation, renewable energy, port and harbour development, land infrastructure etc. (Cornu et al., 2014; Crowder, 2006; Foley et al., 2013; Halpern et al., 2008; Visbeck et al., 2014).

Current governance frameworks, where management is fragmented among sectors and institutions with little attention to conflicts or complementarities among social, economic and environmental objectives, are insufficient to address the issues described above (Holden, 2012; Mitchell, 2005). Fragmented institutional arrangements complicate effective environmental management by: narrowing criteria in decision-making; encouraging competing and contradictory objectives; increasing duplication of effort; and introducing disconnects between national, regional and local-level activities (Edelenbos & van Meerkerk, 2015; Kidd & Shaw, 2007).

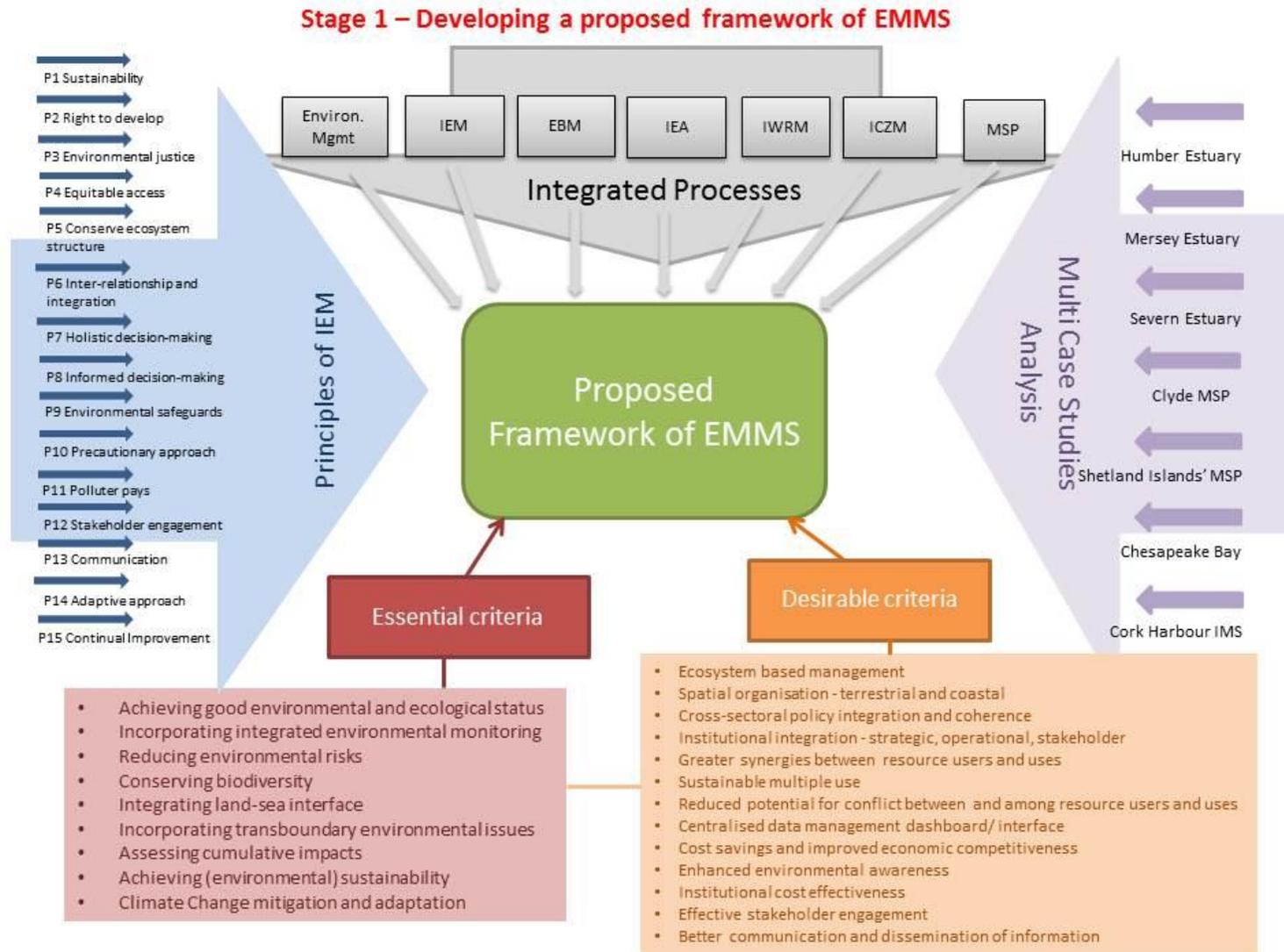
The adoption of more integrated approaches have been advanced as a way to manage the critical inter-relations amongst users, and between users and the environment. It also encourages greater synergies between different activities, leading to more effective spatial planning (Healey, 2006; Kidd & Shaw, 2007; Tewdwr-Jones & Allmendinger, 2006). Therefore in order to have a healthy and productive ecosystem in which human uses and the environment may be synchronised there is a need to move from the current sectoral approach to a more holistic one of integrated management (McLusky & Elliott, 2004).

Integrated environmental management (IEM) is one method to capture and deal with such complexities by providing a more coherent approach to environmental issues with increased coordination between different levels, sectors and resource users. In this regard, IMMERSE devised a proposed framework of integrated Environmental Management and Monitoring System (EMMS) for estuaries and coasts which was informed by:

- Principles of Integrated Environmental Management;
- A review of integrated processes related to estuarine and coastal management; and
- An analysis of the practical implementation of these integrated processes within multiple case studies.

The methodology is illustrated in Figure 1.

Figure 1: Development of a proposed framework of EMMS



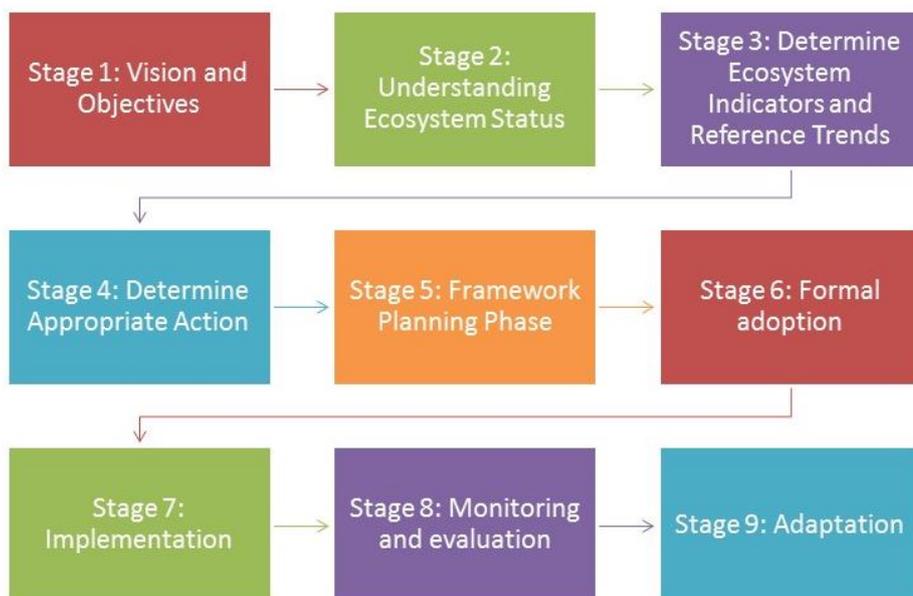
2. Progressing Stage 2 of IMMENSE

Stage 2 (Data Gathering and User Engagement), reported here, was the main empirical element and largely involved evaluating the proposed framework of EMMS, as illustrated in Figure 2, within two case study areas: the Shannon Estuary and Dublin Bay.

The IMMENSE proposed framework had to firstly undergo an experiential review which relied on actions, trial and error and feedback to identify potential benefits and constraints, with the input of a wide range of stakeholders being an essential component of judging the challenges and opportunities for an integrated approach to estuarine management.

The Shannon Estuary and Dublin Bay provide suitable case studies to test the proposed framework of EMMS. Both are multi-functional, with the waters and adjoining lands supporting a range of functions, uses and activities (Clare County Council et al., 2013; Dublin Port Company, 2012; Shannon Foynes Port Company, 2013). Both are important regions for tourism, leisure and recreation, fishing, aquaculture, heritage and landscape and support important habitats and species. Similarly, the landside of both estuaries accommodates extensive human settlements. All these changes have impacted on the functioning of the estuarine system. Future port expansion plans and emerging growth in the renewable energy sector also have the potential to cause additional pressures and conflicts in both of these areas. These case studies clearly share a number of similar characteristics and as two of the main estuarine and coastal resources in Ireland are considered ideal sites to test the framework.

Figure 2: The 9 steps involved in the IMMENSE proposed framework of EMMS



3. Dublin Bay

Dublin Bay is located on the east coast of Ireland, immediately adjacent to the city of Dublin. The bay comprises a shallow and sandy inlet rich in biodiversity. The mouth of the bay is approximately 10km wide from Howth Head in the North to Dalkey Point in the South. The intertidal region extends in a broad crescent-shaped arc round most of the bay, completely enclosing it to the north, west and south, making it an attractive natural harbour, encompassing a total intertidal area of approximately 20 km² (Roth & Wilson, 1998) as illustrated in Figure 3.

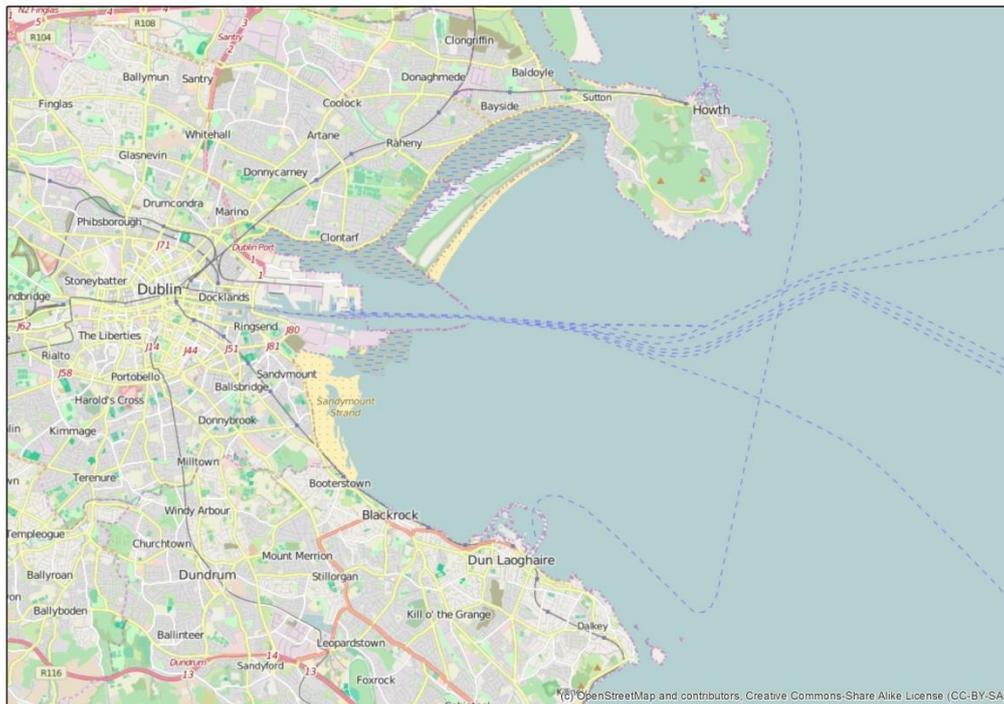


Figure 3: Location of Dublin Bay, east coast of Ireland

The bay is located where a number of significant river basins come together, in particular, the River Liffey which almost divides the bay symmetrically in two. The bay is recognised for its biodiversity and has been designated for its important species and habitats as part of the Natura 2000 network of Special Protection Areas for birds and Special Areas of Conservation; as well as receiving the recently expanded UNESCO Biosphere designation for most of Dublin Bay extending to 300km² (Dublin Bay Biosphere Partnership, 2015).

Dublin Port, the largest in Ireland, is located within Dublin Bay and comprises an area of reclaimed land. With planning permission to redevelop and extend the Alexandra Basin, it is likely to become an even busier port facility, handling increased imports and exports. The port also represents a gateway into the country for millions of visitors each year.

The ESB has three major power generating stations located at North Wall, Ringsend and most notably at Poolbeg with the highly visual chimney stacks a key feature of the area. The Ringsend wastewater treatment plant is another major presence within the bay and is subject to future

expansion proposals. Irish Water is currently developing a strategy for the expansion of the works at Ringsend which will involve the upgrading and expansion of the facility to its full intended capacity. This will involve ending the discharge of treated water at the Liffey River Estuary, moving it instead to a new point approximately 9 kilometres further offshore (Dublin City Council, 2015).

Other users of Dublin Bay include road hauliers, train, bus and car commuters, boat and air passengers, sporting, fishing, tourism, entertainment and recreational users (Brady, 1987). It is therefore an area of both environmental and social importance and significant economic activity as illustrated in Map 1: Dublin Bay Sample Uses and Activities.

3.1 Dublin Bay Management Context

The management of estuarine and coastal resources in Ireland has until recently, been carried out in an ad-hoc manner. This can be explained by the current lack of an overall strategic policy for estuarine, coastal or marine spatial planning in Ireland. Consequently, estuarine and coastal management has been conducted on a sector by sector basis with responsibilities divvied up among a plethora of government departments and agencies. This fragmented approach has been reflected in the management of Dublin Bay for years (Brunton et al., 1987). In 1987 it was acknowledged at the time that the bay was being managed, but by 'default'; whereby a number of public agencies were responsible for various aspects.

A mixture of good luck, good decision-making, an alert public and a network of informal contacts between agencies, have prevented the bay being irreversibly destroyed as an amenity, while the essential commercial activities have been accommodated (Convery, 1987, p.10).

It would appear that this seems to be the case still at present. Currently, there is no person or body with sole responsibility for Dublin Bay. There is no integrated plan for the bay area. This is despite numerous plans having been prepared over the years including city and county development plans, regional strategies and specifically commissioned studies for the bay and surrounding region (CDM et al., 2007; O'Hagan, 2010).

The key agencies directly involved in the current management of Dublin Bay include the local coastal authorities in the Dublin Region i.e. Dublin City Council, Fingal County Council and Dún Laoghaire-Rathdown County Council; in addition to the Eastern and Midland Regional Assembly (EMRA); Dublin Port Company; ESB; Irish Water; Dun Laoghaire Harbour Company; Howth Harbour; EPA; Marine Institute; and the range of government departments including: the Department of Agriculture, Food and the Marine (DAFM); Department of Environment, Community and Local Government (DECLG); Department of Communications Energy and Natural Resources (DCENR); Department of Transport, Tourism and Sport (DTTAS); Department of Arts, Heritage and the Gaeltacht (DAHG); as well as Inland Fisheries Ireland (IFI) and the Sea Fisheries Protection Authority (SFPA). A more detailed diagram of the different bodies with responsibility for Dublin Bay is illustrated in Figure 4 – 'Dublinogram'. This represents an adaptation of the 'horrendogram' and 'organogram' developed by Boyes and Elliott (2014 and 2015) which was described in [Working Paper II \(Policy review and matrix of regulatory compliance\)](#).

At present there is no co-ordinating mechanism for all the responsible agencies to work holistically. Given the continued growth and development of the bay, it is essential that a management and monitoring system is established to deal with political, economic, social and environmental changes.

Work conducted as part of the [Dublin Bay Biosphere](http://www.dublinbaybiosphere.ie/)¹ project has shown the benefits of a partnership approach which has resulted in the extension of the UNESCO designation for environmental, economic, cultural and tourism importance. Additionally, the work being carried out by the [Celtic Seas Partnership](http://celticseaspartnership.eu/)² in progressing the development of a new management framework for Dublin Bay in association with the Eastern and Midland Regional Assembly (EMRA) has the potential to bring stakeholders together and explore options for a planning and governance framework. However, it is noted that a number of plans and strategies that were prepared for the bay were 'ignored and unexecuted' (Brady, 1987, p. 173). The importance of having a lead person or organisation and dedicated staff and resources to ensure the successful development, implementation and longevity of integrated management for estuarine and coastal areas should be highlighted.

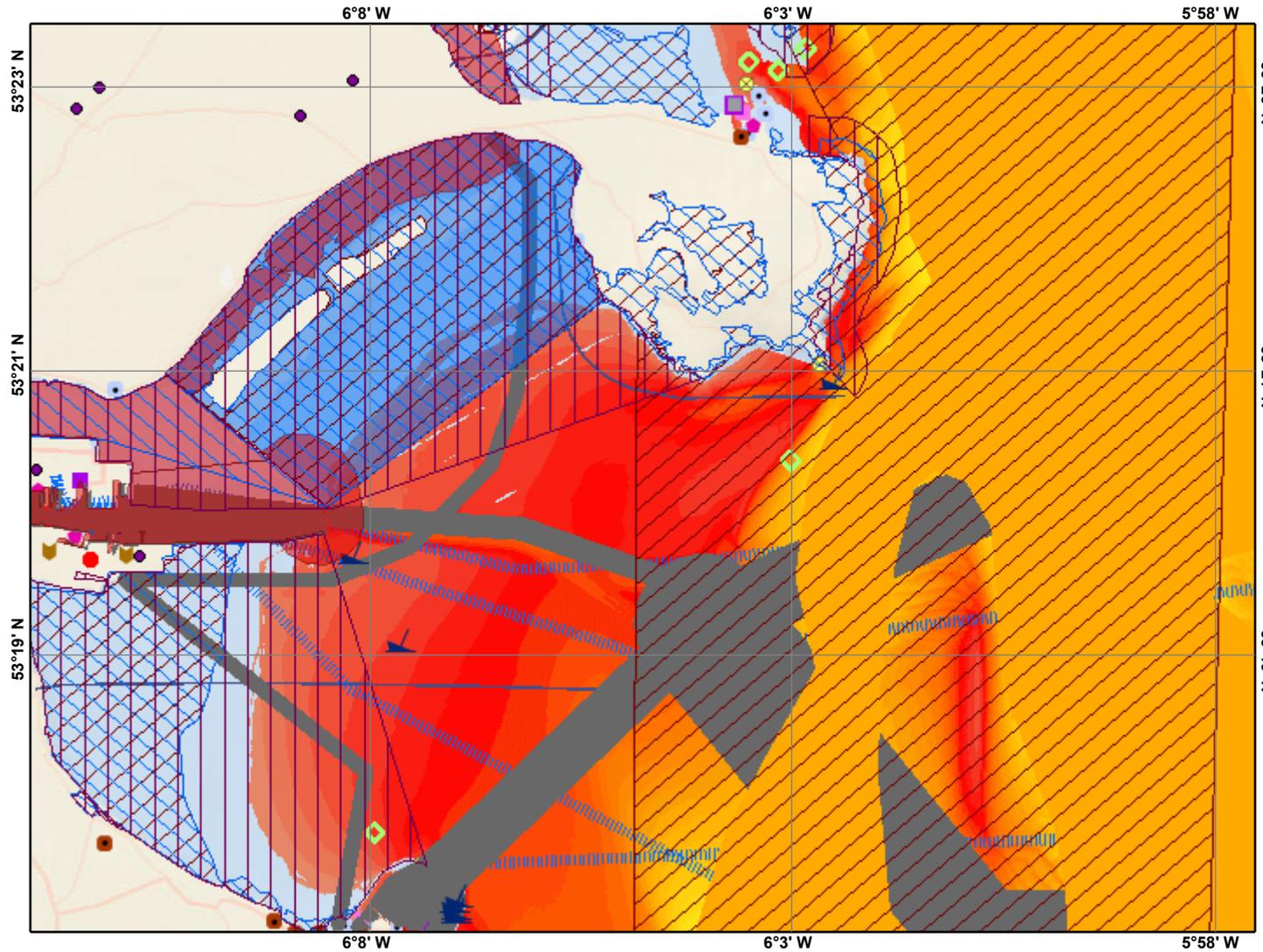
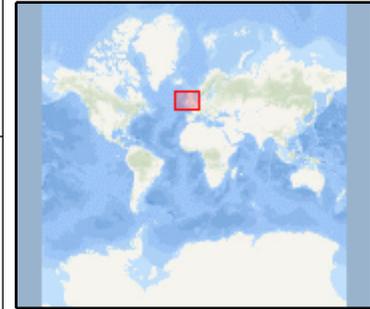
A formal system of integrated estuary and coastal management would allow for the integration of both land and marine planning systems. While projects such as the Dublin Bay Biosphere and Celtic Seas Partnership are an indication that a co-ordinated approach to coastal management in Ireland is possible, a more formalised system is necessary to ensure vertical (organisational), horizontal (cross-sectoral) and territorial (land-sea) integration.

At a time of new emerging national coastal and marine legislation, it is opportune to reflect on the best and most effective ways of sustainably governing and harnessing our natural resources for the benefit of all. Dublin Bay as a case study is a valuable resource in terms of providing wide-ranging data and information on local environmental, economic and societal-related coastal issues. It is a well-researched area with previous attempts at integrated management (CDM et al., 2007; O'Hagan, 2010). It is therefore regarded a practical case study to expose the proposed framework of EMMS to the critical evaluation of stakeholders who have experience in attempting an integrated approach at this scale. This will help to inform the development of a general template that can be transferable to any national estuarine and coastal environment.

¹ <http://www.dublinbaybiosphere.ie/>

² <http://celticseaspartnership.eu/>

Dublin Bay Sample Uses and Activities



Legend

- WFD Transitional Waters
- Currently Designated Irish Continental
- OSPAR Dumping of Matter at Sea
- INFOMAR Coastal Survey
 - High : 50
 - Low : -5000
- Wells
- Power Stations
- Licensed IPPC Facilities
- Urban Waste Water Treatment Plants
- IMAGIN Irish Sea Marine Aggregates
- Special Area of Conservation
- Proposed Natural Heritage Area
- Natural Heritage Area
- Special Protection Area
- OSPAR Marine Protected Area
- INFOMAR Survey Shipwreck
- Traffic Separation Exclusion Zone

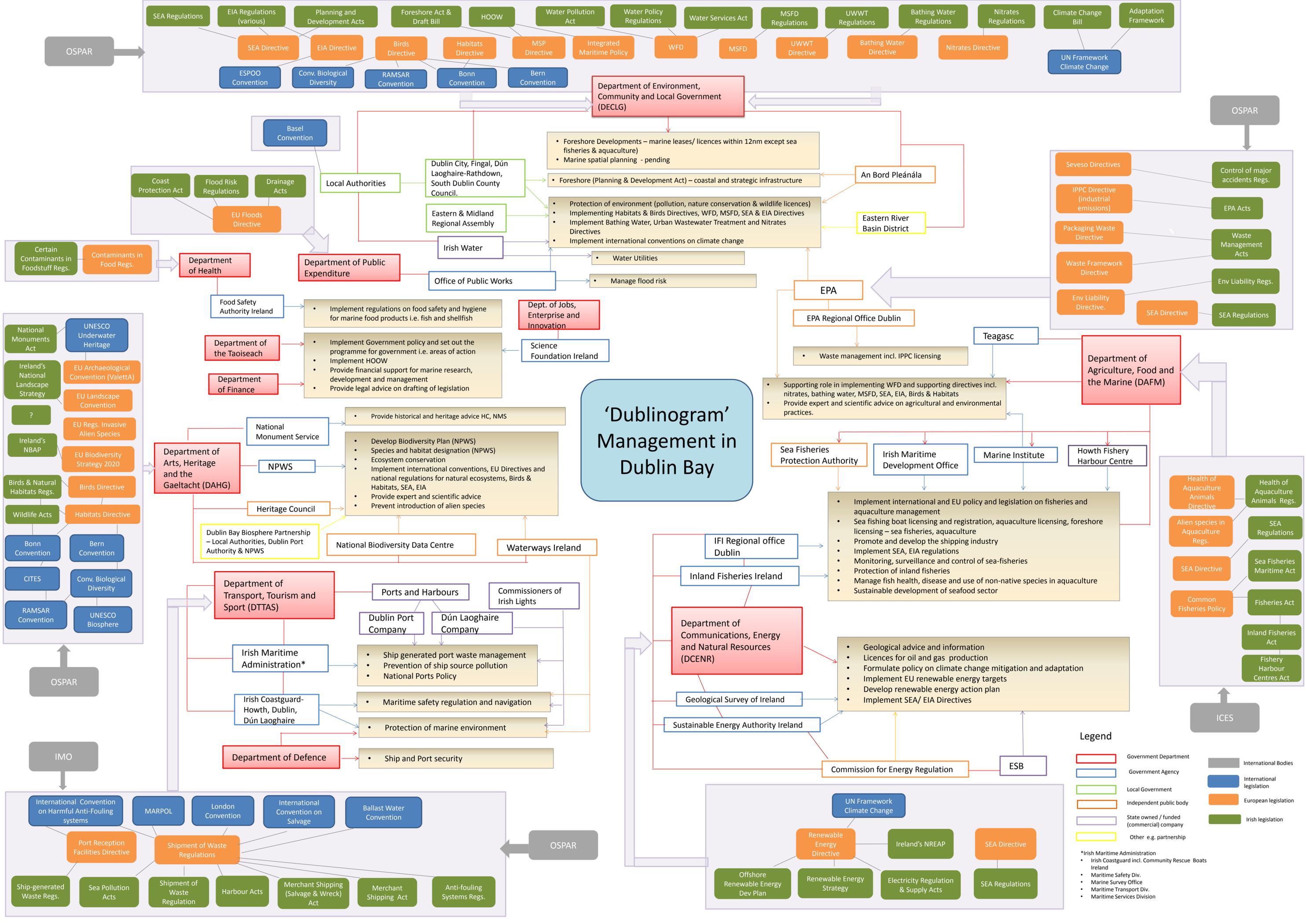
Date: 24 November 2015

Scale: 1 : 144448

Map centre: (Web Mercator) 53°20'54.88" N, 6°5'18.42" W

This map is a user generated static output from an internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current or otherwise reliable. This map is not to be used for navigation.

Notes:



'Dublinogram' Management in Dublin Bay

Department of Environment, Community and Local Government (DECLG)

- SEA Regulations
- EIA Regulations (various)
- Planning and Development Acts
- Foreshore Act & Draft Bill
- HOOW
- Water Pollution Act
- Water Policy Regulations
- Water Services Act
- MSFD Regulations
- UWWT Regulations
- Bathing Water Regulations
- Nitrates Regulations
- Climate Change Bill
- Adaptation Framework
- UN Framework Climate Change
- SEA Directive
- EIA Directive
- Birds Directive
- Habitats Directive
- MSP Directive
- Integrated Maritime Policy
- WFD
- MSFD
- UWWT Directive
- Bathing Water Directive
- Nitrates Directive
- ESPOO Convention
- Conv. Biological Diversity
- RAMSAR Convention
- Bonn Convention
- Bern Convention

Local Authorities

- Coast Protection Act
- Flood Risk Regulations
- Drainage Acts
- EU Floods Directive
- Dublin City, Fingal, Dún Laoghaire-Rathdown, South Dublin County Council.
- Eastern & Midland Regional Assembly
- Irish Water

- Foreshore Developments – marine leases/ licences within 12nm except sea fisheries & aquaculture
- Marine spatial planning - pending
- Foreshore (Planning & Development Act) – coastal and strategic infrastructure
- Protection of environment (pollution, nature conservation & wildlife licences)
- Implementing Habitats & Birds Directives, WFD, MSFD, SEA & EIA Directives
- Implement Bathing Water, Urban Wastewater Treatment and Nitrates Directives
- Implement international conventions on climate change

An Bord Pleánála

Eastern River Basin District

Department of Health

- Certain Contaminants in Foodstuff Regs.
- Contaminants in Food Regs.
- Food Safety Authority Ireland

Department of Public Expenditure

- Implement regulations on food safety and hygiene for marine food products i.e. fish and shellfish

Dept. of Jobs, Enterprise and Innovation

- Water Utilities

Office of Public Works

- Manage flood risk

Department of the Taoiseach

- Implement Government policy and set out the programme for government i.e. areas of action
- Implement HOOW
- Provide financial support for marine research, development and management
- Provide legal advice on drafting of legislation

Science Foundation Ireland

Department of Arts, Heritage and the Gaeltacht (DAHG)

- National Monuments Act
- UNESCO Underwater Heritage
- Ireland's National Landscape Strategy
- EU Archaeological Convention (Valetta)
- EU Landscape Convention
- EU Regs. Invasive Alien Species
- Ireland's NBAP
- EU Biodiversity Strategy 2020
- Birds & Natural Habitats Regs.
- Birds Directive
- Wildlife Acts
- Habitats Directive
- Bonn Convention
- Bern Convention
- CITES
- Conv. Biological Diversity
- RAMSAR Convention
- UNESCO Biosphere

Heritage Council

- Provide historical and heritage advice HC, NMS

NPWS

- Develop Biodiversity Plan (NPWS)
- Species and habitat designation (NPWS)
- Ecosystem conservation
- Implement international conventions, EU Directives and national regulations for natural ecosystems, Birds & Habitats, SEA, EIA
- Provide expert and scientific advice
- Prevent introduction of alien species

National Biodiversity Data Centre

Waterways Ireland

Department of Transport, Tourism and Sport (DTTAS)

- Ports and Harbours
- Commissioners of Irish Lights
- Dublin Port Company
- Dún Laoghaire Company
- Irish Maritime Administration*
- Irish Coastguard-Howth, Dublin, Dún Laoghaire
- Department of Defence
- Ship and Port security

International Convention on Harmful Anti-Fouling systems

MARPOL

London Convention

International Convention on Salvage

Ballast Water Convention

Port Reception Facilities Directive

Shipment of Waste Regulations

- Ship-generated Waste Regs.
- Sea Pollution Acts
- Shipment of Waste Regulation
- Harbour Acts
- Merchant Shipping (Salvage & Wreck) Act
- Merchant Shipping Act
- Anti-fouling Systems Regs.

EPA

EPA Regional Office Dublin

- Waste management incl. IPPC licensing

Teagasc

Department of Agriculture, Food and the Marine (DAFM)

- Supporting role in implementing WFD and supporting directives incl. nitrates, bathing water, MSFD, SEA, EIA, Birds & Habitats
- Provide expert and scientific advice on agricultural and environmental practices.

Sea Fisheries Protection Authority

Irish Maritime Development Office

Marine Institute

Howth Fishery Harbour Centre

- Implement international and EU policy and legislation on fisheries and aquaculture management
- Sea fishing boat licensing and registration, aquaculture licensing, foreshore licensing – sea fisheries, aquaculture
- Promote and develop the shipping industry
- Implement SEA, EIA regulations
- Monitoring, surveillance and control of sea-fisheries
- Protection of inland fisheries
- Manage fish health, disease and use of non-native species in aquaculture
- Sustainable development of seafood sector

Department of Communications, Energy and Natural Resources (DCENR)

- Geological advice and information
- Licences for oil and gas production
- Formulate policy on climate change mitigation and adaptation
- Implement EU renewable energy targets
- Develop renewable energy action plan
- Implement SEA/ EIA Directives

Geological Survey of Ireland

Sustainable Energy Authority Ireland

Commission for Energy Regulation

ESB

UN Framework Climate Change

Renewable Energy Directive

Ireland's NREAP

SEA Directive

Offshore Renewable Energy Dev Plan

Renewable Energy Strategy

Electricity Regulation & Supply Acts

SEA Regulations

Seveso Directives

IPPC Directive (industrial emissions)

Packaging Waste Directive

Waste Framework Directive

Env Liability Directive.

SEA Directive

Control of major accidents Regs.

EPA Acts

Waste Management Acts

Env Liability Regs.

SEA Regulations

Health of Aquaculture Animals Directive

Health of Aquaculture Animals Regs.

SEA Regulations

Sea Fisheries Act

Fisheries Act

Inland Fisheries Act

Fishery Harbour Centres Act

Legend

- Government Department (Red)
- Government Agency (Blue)
- Local Government (Green)
- Independent public body (Orange)
- State owned / funded (purple)
- Other e.g. partnership (Yellow)
- International Bodies (Grey)
- International legislation (Dark Blue)
- European legislation (Light Orange)
- Irish legislation (Dark Green)

*Irish Maritime Administration
 • Irish Coastguard incl. Community Rescue Boats Ireland
 • Maritime Safety Div.
 • Marine Survey Office
 • Maritime Transport Div.
 • Maritime Services Division

4. Workshop Design and Application

The methodology for Stage 2 of the research was agreed in consultation with the IMMERSE Steering Group (ISG), and involved data collection, interviews and facilitating workshop events to present and critique the proposed framework of EMMS among future potential users.

A specific aim of the stakeholder workshop events was to re-examine the purpose of the framework and how it could be used to achieve environmental sustainability and compliance. Following on from a successful Shannon Estuary stakeholder workshop held in June 2015, the Dublin Bay workshop presented another opportunity to reflect and build on the issues raised and the critique received from stakeholders at this event. This would ensure a more comprehensive evaluation of the EMMS framework in terms of its applicability and usability.

4.1 Stakeholder participation

During the initial stages of IMMERSE, a steering group was established comprising key users of the research and includes representatives from government departments, agencies, local authorities and NGOs. Both the Celtic Seas Partnership (CSP) and the Eastern and Midland Regional Assembly (EMRA) are represented on the Steering Group and this provides a key link with the stakeholders within the Dublin Bay case study. In association with the CSP and EMRA, key stakeholders within Dublin Bay were identified and arrangements were made for: the sharing of information; raising awareness of IMMERSE; and support for the stakeholder workshop.

The SIFP Steering Group, CSP and EMRA were fully supportive of the IMMERSE project and confirmed their willingness to assist with the project and in particular, the stakeholder workshop event held on 9th September 2015.

4.2 Data and information collection

Information relating to Dublin Bay was gathered from journal articles, environmental reports, spatial plans, Dublin Bay studies and mapping related to the Liffey and Dublin Bay. The proposed framework of EMMS sought to build on the information gathered and experience gained from previous attempts at integrated approaches to management within Dublin Bay. The Dublin Bay stakeholder engagement workshop was an opportunity to ask the stakeholders how a framework might be populated in terms of data and information needs, actions required and stakeholder participation which will be explored further as part of the IMMERSE research.

4.3 Stakeholder Scoping Interviews

At the start of 2015, interviews were conducted with key national and local stakeholders to scope issues around estuarine and coastal management in Ireland. Those interviewed included local authority planners and ecologists, NPWS officers and national marine policy and licensing professionals.

The interviews were informative in identifying pertinent topics for discussion and helping to design interactive workshop tasks. The key issues raised during the interviews are outlined in the following sections.

Identifying opportunities for integrated management

- A joined-up approach is necessary for integrated coastal zone management.

- Existing management structures could be augmented through better communication and collaboration among the different agencies with responsibilities for the management of the coast as well as coastal users e.g. fisheries, port companies, local authorities etc.
- The development of a common approach is a potential opportunity to avoid competing agendas. For example, it was suggested that some sectors may be more in favour of development rather than environmental conservation. Therefore by bringing different agencies together it may present an opportunity to identify and agree on priority management issues in a collaborative setting.
- A joined-up approach has the potential to identify and quantify cumulative and in-combination effects.

Challenges in implementing integrated management

- Governance and resources i.e. financial and human resources were identified as challenges to implementing an integrated approach.
- Full-time personnel should be assigned responsibility to oversee the framework's application. This would ensure continuity over time rather than ad-hoc management when required.
- The agreement of various government departments and agencies on management measures was seen as a challenge given the range and scope of their differing agendas e.g. economic development as opposed to nature conservation.

Stakeholder Engagement

- The general public/ local citizens should be involved in the development of an integrated framework of EMMS at key stages.
- Relevant government departments i.e. the Department of Agriculture, Food and the Marine, should be involved, particularly as the consenting authority for fisheries and aquaculture developments under current foreshore legislation.

Data and information sources

- A lot of baseline information is already available for estuarine and coastal areas e.g. Marine Atlas, EIONET (European Environment Agency).
- In terms of access to the data, some interviewees felt that it wasn't clear who owned data and who was managing or had responsibility for data. For example, it was noted that as part of an EIA, the project consultants usually commission and collate significant data which is submitted to the consenting authority as part of an EIS. However, the original survey data or information is not made freely available and tends to be commercially sensitive information.
- The need for a central repository to make estuary, coastal and marine information and spatial data freely available was recommended.

Indicators and monitoring

- Internationally there are already a range of indicators identified for reporting and monitoring under the Water Framework, the Marine Strategy Framework, the SEA, Floods, Birds and Habitats Directives.
- Further guidance is required for indicators on emerging issues such as marine litter, invasive non-native species and the social impacts of marine developments on the local community.

- Need for better guidance or information on establishing historical biodiversity baseline conditions. Difficult to determine the extent of historical data to review.

Implementation of an EMMS framework

- There are merits to the framework being both a statutory and voluntarily adopted instrument.
- With a voluntary framework, some stakeholders felt that perhaps agencies would not be consistent in terms of implementing it in its entirety and worse still, may even 'cherry pick' certain aspects of the framework. Furthermore, there is a belief that a voluntary instrument may not have any sanctions enforced and so it should be built into a statutory system.
- How the framework could exist within the newly emerging marine spatial planning system for Ireland was another consideration.

The insight provided by the interviewees helped to formulate a range of questions linked to each of the stages within the IMMERSE proposed framework. In terms of developing the partnership approach, the workshop investigated building commitment to the process of integrated management; establishing shared goals and objectives; and exploring the priority issues for Dublin Bay in terms of environmental, economic and social development.

With regards to governance and resources, the tasks queried who should be the establishing/ lead agency in charge of the framework for Dublin Bay and who should fund its development and implementation. During the tasks participants were then asked about potential stakeholder involvement and at which stages of the framework they should be consulted.

In relation to data, stakeholders were asked about the mapping of coastal uses and users and the availability of data sources and access to information. They were also queried on the availability of relevant information which could be used to determine estuarine parameters. Questions were posed during the workshop tasks on information gaps and what was considered necessary to assess impacts and risks. The participants were also asked about current indicators and monitoring regimes as well as distinguishing targets and thresholds for estuarine and coastal management.

The implementation of the framework was explored during the workshop in terms of both statutory and voluntary adoption as well as considering its potential challenges and benefits. Whether it could be used as statutory guidance or as best practice would require further reflection and research as part of IMMERSE. The participants' responses to these questions and the aforementioned issues is discussed in the following section.

5. Dublin Bay Stakeholder Engagement Workshop

The Dublin Bay stakeholder engagement workshop was held in the Ballymun Civic Centre, Dublin on 9th September 2015 and was a one-day event attended by 19 participants. A list of attendees is available in Appendix 1. The main aim of the workshop was to present the proposed framework of EMMS to key stakeholders and seek their feedback and critique of how it performed when considered within the context of Dublin Bay.

Figure 4: Dublin Bay Workshop on 9th September 2015



The participation of key stakeholders in the workshop helped to identify the potential benefits and constraints of the framework as well as considering possible challenges to its future use. This feedback will contribute to future suggestions on how such challenges might be overcome.

The workshop event comprised the following key stages:

- Briefing participants on the purpose and scope of the workshop;
- Presentation by Walter Foley, Celtic Seas Partnership in Dublin Bay and Eastern and Midland Regional Assembly;
- Overview of IMMERSE progress to date;
- Tasks A - B Presenting, discussing and applying the proposed framework of EMMS using small group tasks;
- Open discussion on refining the proposed framework going forward; and
- Wrap-up to confirm workshop outcomes and outputs.

A copy of the workshop agenda is included in Appendix 2.

The workshop commenced with a presentation by Walter Foley, Celtic Seas Partnership (CSP) and Eastern and Midland Regional Assembly (EMRA). The speaker provided an introduction to the research currently being conducted within Dublin Bay and the synergistic relationship between IMMERSE and CSP in terms of study area, stakeholders, data and information sharing and best practice in integrated coastal management.

The ultimate aim of the Dublin Bay CSP project is to develop a strategic management framework for the bay. The speaker described the steps in achieving this outcome including: stakeholder engagement; identifying key influencers; achieving inclusiveness; defining an area; developing a

framework; and deciding on an approach. The project will also outline integration of the Marine Strategy Framework Directive (MSFD) with land use planning.

The speaker described some of the challenges he had encountered in terms of defining and designating a proposed coastal area, engaging with numerous stakeholders with an interest in Dublin Bay and incorporating Dublin Bay data on the [Dublin Dashboard](#)³. The dashboard, in particular, aims to incorporate time-series, spatial and real-time information on the bay from a variety of sources. Expected project outputs include guidelines for MSFD and land use integration; and a draft strategic management framework for Dublin Bay in January 2016 which will be circulated to stakeholders for feedback. A copy of the presentation is available on the [IMMERSE website](#).

Following the guest speaker’s presentation, an overview of IMMERSE research progress and findings to date was provided. An emphasis was placed on integration which was highlighted in the use of a ‘horrendogram’ and ‘organogram’ included in the presentation (and discussed in more detail in [Working Paper II](#)). Both diagrams were used to illustrate and describe the lack of a co-ordinated approach to estuarine and coastal management; characteristic of both Irish and international management systems. The proposed framework of EMMS, devised as part of IMMERSE, was then introduced to the stakeholders. The importance and value of their engagement and feedback in its review during the workshop was highlighted as key to progressing the aims of the research.

5.1 Summary of findings from the interactive tasks

Prior to commencing any of the tasks, the stakeholders were introduced to the integrated management approach being endorsed in the other case study, the Shannon Estuary. The [Strategic Integrated Framework Plan for the Shannon Estuary \(SIFP\)](#)⁴ is ‘an inter-jurisdictional land and marine based framework plan to guide the future development and management of activities within the Shannon Estuary’ (Clare County Council et al., 2013, p.1). The stakeholders were then updated on some of the emerging themes which arose during the Shannon Estuary stakeholder workshop held earlier in the year on 25th June 2015. This overview was to highlight some of the potential issues which could also be considered within the management of Dublin Bay. These themes prompted a number of questions for the Dublin Bay stakeholders to bear in mind during the workshop tasks and are included in Table 1 as follows:

Table 1: Overarching themes and questions to be considered during the workshop

EMMS framework considerations
<p>What is the EMMS ‘framework’ trying to achieve?</p> <ul style="list-style-type: none"> • Is it a Model/ Process/ Framework/ Guidance?
<p>Governance</p> <ul style="list-style-type: none"> • Who should be the lead agency or should it be a partnership approach? • Access to funding and resources. How to build commitment? • Existing legislative framework – where does it fit in? • Stakeholders - who should be involved?
<p>Management and Monitoring Approach</p> <ul style="list-style-type: none"> • Info on baseline conditions, monitoring, indicators, trends • Exchanging information - responsibilities and users’ activities

³ <http://www.dublindashboard.ie/>

⁴ <https://shannonestuariesifp.wordpress.com/>

<ul style="list-style-type: none"> • Resolve potential conflicts & realise opportunities for environmental, social & economic improvements • Communication and education – encourage on-going participation. • Implementation – Statutory v. Voluntary status of the EMMS framework • Monitoring & Evaluation – continuous cycle • Adaptation
<p>Tools</p> <ul style="list-style-type: none"> • Spatial Data: - Access to high quality, up to date and relevant data for decision-making • More expertise – technical capabilities? • Identify areas of opportunity and/ or areas of constraint? • Cumulative impacts

The stakeholders were then asked to actively participate in two tasks (A-B) as prescribed in the following sections.

5.1.1 Task A: Introduction to proposed framework of EMMS

The first task of the workshop, Task A: *Introduction to proposed framework of EMMS*, encouraged participants to review the IMMERSE proposed framework and each of the nine stages involved. Each stage included a number of suggested steps and actions which the stakeholders were asked to consider and answer a number of related questions. They were also invited to provide information on access to data or key data sources. The aim of this task was to build an understanding of what the framework might involve in terms of governance, resourcing, data and information needs, actions required and stakeholder engagement.

A summary of participant responses is included in Table A, Appendix 3 and discussed in the following sections.

Stage 1: Vision and Objectives

When questioned about the geographic extent of the EMMS framework, some of stakeholders felt that this was a ‘multi-criteria’ decision. There were a number of suggestions such as perceived, administrative, ecological and legal/ statutory boundaries which could be considered for the EMMS framework extent. The perceived boundaries related to the public’s view of the bay’s reach. The administrative boundaries referred to the jurisdiction of the four local authorities’ i.e. Dublin City Council, Dún Laoghaire-Rathdown, Fingal County Council and South Dublin County Council, particularly in relation to strategic planning. It was noted that the Dublin Bay Biosphere extent encompasses a core, buffer and transition zone. Another suggestion was the Dublin Bay Special Protection Area (SPA) with zones of transition as a possible geographic extent.

The pending transposition of the Marine Spatial Planning Directive (MSPD) into Irish legislation was identified as a key piece of legislation which could give guidance on the geographic extent. Other extents recommended were in line with the Water Framework and Floods Directive management areas and associated plan boundaries. It was however, deemed that there was no right or wrong answer.

In terms of the lead agency or who would be responsible for the EMMS framework, there were a number of suggestions which included the local authorities, the EMRA and the EPA; while other

ideas included the establishment of a new independent body or partnership. With this type of partnership, it was proposed that you could have one lead authority. A planning authority was considered the most suitable to take the lead given its competency in planning and community engagement. It was noted that the Shannon SIFP Steering Group seemed to be working well which comprises a partnership approach with Clare County Council taking the lead responsibility for overseeing the SIFP. The lead authority would also have to work in partnership with other key organisations and stakeholders including Dublin Port, ESB, fisheries etc.

It was highlighted that a separate group could be regarded as an extra bureaucratic layer to the current management system. A bottom-up approach was also considered a prerequisite with the partnership possibly sitting on the newly formed Local Community Development Committee (LCDC), established under the regional assembly structure. The LCDCs include Public Participation Networks (PPNs) which, it was suggested, could in the long term be similar to the coastal partnerships which exist in the UK.

With regards to stakeholders involved in the development of the EMMS framework a number of recommendations were suggested. These included the general public; recreational users including: diving, sailing, kayaking, wind surfing, angling, walking, fishing and swimming; economic interests including Dublin Port, the harbour authorities, fisheries, ESB, Irish Water, oil and gas companies; the Coastguard/ RNLI; tourism operators i.e. Dublin Bay cruises; partners involved with Dublin Bay Biosphere (DBB); and the relevant government departments and agencies. It was noted DBB has collated a contact database of non-governmental organisations (NGOs), community groups and businesses for the locality. Fáilte Ireland reportedly manages the Living Bay Forum which also has information on tourism operators in the bay area; while the harbourmaster would have a list of fishermen active in the area.

When asked what should be the overarching goals and objectives, the participants made a number of suggestions. Predominantly, sustainable development was considered the main goal with a balance of social, economic and environmental objectives to the forefront of any framework. Compliance with European legislation would also be a minimum requirement i.e. achieving good environmental and ecological status. The ecosystem approach was also recommended for delivering sustainable development; while the involvement of all stakeholders was also considered an important objective. Other recommended goals included: enhancing well-being, the protection/ conservation of designated biodiversity, the promotion of CFRAMS i.e. flood risk management measures, climate change, air quality and human health. The availability of data was also regarded a necessary objective.

The funding of the EMMS framework would be dependent on the governance structure put in place. One suggestion was that a single body was needed that was democratic and included a mixture of people who avail of and use the bay. The funding would be in accordance with the normal taxation structure of that body. Other international examples of bay management could be reviewed for examples of good practice. For example, Baltimore has a long-term ecological research project funded by federal government. It was noted however, that Ireland has a centralised governance structure and consequently local authorities are limited in what they can do with regards raising revenue.

The potential for the CSP to deliver some ecosystem service assessment was considered useful in terms of capitalising on natural capital values. This could move towards financial incentives and economic models i.e. green capital funds. It was proposed that ecosystem services approaches may open ways to levy new, progressive funding streams.

Another comment in relation to funding was that any funder could become a stakeholder. Therefore these stakeholders could shape and direct the philosophy of the framework which could also result in potential power issues.

It was proposed that the existing system should be able to absorb the funding framework. Furthermore, one should be careful that another 'stratum' is not introduced to complicate matters via additionally created bodies.

With regards to building commitment to the EMMS process, it was considered important for people to see efficiency and effectiveness within the framework which could align with other strategies and objectives. Elsewhere it was suggested that a democratically mandated body may be required to facilitate the EMMS process. Joined-up thinking was also considered appropriate to build commitment to the framework; while consultation with key sectors/ actors in an equitable manner would also be necessary to ensure inclusiveness and ownership of the framework. Citizen science was provided as an example of inclusiveness which could also result in giving stakeholder ownership of the framework.

Stage 2: Understanding Ecosystem Status

When participants were asked about the condition/ state of Dublin Bay in environmental, economic and social terms, it was considered that the condition of the bay was very good. It was acknowledged that there were only a couple of IPPC licensed facilities within the area such as the ESB stations. Other participants felt that it was difficult to find information about the status of the bay and that it was difficult to access data. Similarly, participants were unsure as to the different monitoring that was taking place in the bay. Generally, it was acknowledged that there was a lot of information out there but it was unclear how to avail of it. Examples of data availability included Fáilte Ireland datasets on assets and amenities and the EPA [SPLASH](http://splash.epa.ie/) website⁵. It was recognised that this issue was raised at the Shannon Estuary workshop i.e. the ambiguity surrounding data availability and access. Similarly, many Dublin Bay participants agreed that more resources were required to make data available in a simple and user-friendly manner.

In relation to historical uses within the bay, it was noted that a lot of information around port activities was available within the Port Company and will be available within Trinity College Dublin as part of a marine heritage mapping project. Information on the history of dredging within the bay is available within the Diving Bell museum. In terms of future uses, some suggestions included dredging, oil and gas exploration, tourism and climate change as key issues. When asked about mapped uses, some sources of information were provided and are included in Table A, Appendix 3.

With regards to pressures on Dublin Bay, the main demands highlighted by participants related to human activities such as shipping, dredging, dumping at sea, IPPC licences, waste and storm water discharge and treatment, water extraction, fishing (minor), recreation, tourism, litter and noise.

⁵ <http://splash.epa.ie/>

Climate change was also considered to be an imminent pressure on the bay. Recommended sources of information are included in Table A, Appendix 3.

When it came to examining interconnections between the different coastal users and uses, the [ODEMM⁶](#) approach was recommended as an example of best practice. ODEMM is a research project on delivering ecosystem-based marine management and has looked at the different coastal/ marine uses and their associated pressures and impacts on the environment. This approach required expert input and, as was noted for a Dublin Bay context, could comprise sub groups within a Dublin Bay partnership. The use of spatial mapping in identifying interconnections was also recommended. Information on ecosystem capacity and resilience would also be required to understand potential impacts.

The establishment of some body or a forum was proposed as an option for bringing stakeholders together. This body could be statutory, although not necessary. Previously, the Dublin Bay Task Force was set up to look at the management of Dublin Bay and it was suggested that something similar could be formed. Conversely, it was queried why it was necessary to bring all sectors together in the first place. It was implied that this would not be possible as most sectors want to meet on their own terms and have limited time and resources. The use of PPNs within the structure of LCDCs was advocated.

The priority issues for Dublin Bay cannot be articulated in general terms. It was recommended to refer to other strategies such as the Regional Planning Guidelines, Port Strategy etc. to determine the priority issues proposed by other key actors and sectors. Many of these have been prioritised by EU legislation and the public. Other participants felt that there were multiple priorities for the bay including access, cleanliness, sustainability, flooding, development control and maintaining a functioning port balanced with environmental protection.

Stage 3: Determine Ecosystem Indicators and Trends

There was a general consensus that there are already a number of environmental indicators currently used for environmental monitoring. A number of examples provided included those used in reporting under the Marine Strategy, Water Framework and Habitats Directives. It was noted that the ESB have to incorporate monitoring as per the terms of their IPPC licence. Other indicators which could be used included erosion measurements and sediment rates and patterns for coastal dynamics. Data collected by the Dublin Bay Bird Partnership and information gathered through citizen science initiatives were also highlighted. Non-environmental indicators could include Fáilte Ireland data on tourism visitors; industrial and economic indicators based on port exports and imports; demographic and employment figures for a socio-economic context; and crime-related information for social and environmental profiling. It was also considered worthwhile to undertake a review of the key bodies and what they already monitor before identifying which additional indicators were needed.

In terms of assessing condition and trends in the bay, it was noted that baseline information collated in accordance with the WFD, MSFD and Habitats Directive was very useful. This information is reported to the European Commission by DECLG. More comprehensive links between data was

⁶ <https://www.liverpool.ac.uk/odemm/>

considered necessary. The Irish Maritime Development Office (IMDO) was advocated as a source of high level socio-economic information. Other data is available from DTTAS on transport and shipping and DAFM for fisheries while the Marine Institute published an annual stock book on fisheries status. The importance of quality data and the control of information collected was also highlighted as a key consideration.

When contemplating ecosystem targets and trends it was suggested that the greatest challenge instead could be how to resolve conflicts and reach a compromise. In cases like this, it was recommended to look at international practice where other estuaries and bays with bigger and busier ports also maintained their Natura 2000 designation for biodiversity. It was believed that guidance was available but it wasn't being used. An implication of setting targets, it was noted, was the cost association which was sometimes overlooked. For example, one participant noted that in one instance consultants were making unrealistic recommendations for the management of Natura 2000 sites whilst managers on the ground had an insufficient budget. It was therefore proposed more suitable to have an agreed plan amongst stakeholders with some forum to mediate potential conflicts.

Stage 4: Determine Appropriate Action

To assess the impacts of a proposed development on Dublin Bay, participants noted it was likely to involve multiple bodies, particularly in relation to strategic infrastructure development i.e. An Bord Pleanála, EPA, local authorities etc. It was also suggested that any proposed development would have to be considered in accordance with the relevant environmental directives, i.e. SEA, EIA and Habitats Directive, where appropriate. Site specific, as well as cumulative impacts, would all have to be taken into consideration.

Specific suggestions included the use of modelling to determine spatial impacts from climate change and, in particular, sea level rise. The use of CFRAMS, for example, was deemed to be crucial for future scenario modelling and the use of evidence based approaches in future assessments. Additionally, the need for more communication between various councils when assessing cumulative impacts on Dublin Bay was also emphasised.

Regarding information gaps, it was implied that there was still a lack of information available in relation to dredging and its potential impacts on biodiversity, recreational users and turbidity implications. Other areas considered to be lacking in information were: natural disasters, climate change, shipping of hazardous material, implications of tourism and property development and addressing cumulative impacts. Again the use of citizen science and local knowledge was recommended to help address data gaps.

When asked if existing governance and management mechanisms could support a multi-sectoral approach, the majority of participants did not think it was possible at present. Again, reference was made to the ODEMM approach which endorsed managing human activities using a risk assessment approach. It was also noted that under current structures, it was not possible to identify opportunities for synergies between coastal resources and users. Similar to the feedback from the Shannon Estuary workshop, it was suggested that sensitivity mapping would be useful to help with multi-sectoral management within the bay. The potential of the Dublin Bay Biosphere was highlighted as an opportunity for encouraging this management approach also.

To reduce potential conflict between coastal resources and users, participants advised that certain legislation already includes techniques to resolve issues i.e. in relation to public health and safety which are key legal principles. It was suggested that objectives should be set at an appropriate level i.e. strategic or local, with a mechanism for review. This could help to reduce potential spatial conflicts. Of equal importance was for stakeholders to have ownership of such objectives and to be kept informed and engaged from an early stage.

Stage 5: Framework Planning Phase

When asked how the overall vision and aims for the management of Dublin Bay might be achieved, participants felt that all local authorities generally had the best interests of the bay at heart. It was also suggested that everyone in the Dublin Bay region had the same vision for the bay which was for it to be environmentally friendly and healthy. It was proposed that all stakeholders should be involved from the start of the process which should also be as inclusive as possible. It was also important to find a common ground between all stakeholders involved. Some participants also believed that if the framework started off as a voluntary instrument it could get more buy-in. It could then be progressed from there into a statutory process, similar to the Shannon SIFP.

In terms of prioritising management options for Dublin Bay, public safety, ecological conservation and well-being were considered to be the most important. Elsewhere it was suggested that this related to two issues: 1) resolving conflicts; and 2) prioritisation which involved budgeting, political will and people's willingness to compromise and reach a shared agreement. Scale was also regarded as an issue in terms of the size of the subject i.e. local or city-wide.

With regards to the management of environmental pressures, participants reflected that this would be dependent on the type, and peoples' understanding, of receptors. An examination of spatial overlaps could also assist with identifying potential pressures and aid management measures. Additionally, the MSFD programme of measures was considered a useful resource as well as consultation and engagement with the various coastal users and responsible agencies. A central portal of data and information was also recommended as a useful tool to help with management.

In terms of evaluating management strategies, it was noted that there are various processes already in place for marine protected areas, Natura 2000 sites and as advocated by OSPAR. However, it was also cautioned that designation itself did not necessarily equate to management or protection of the resource. One participant noted that some Natura 2000 sites were experiencing species decline despite its designation status. The process of Strategic Environmental Assessment also required an evaluation of alternatives which could also be considered useful in this context.

With regards to stakeholder involvement during the framework planning phase, it was recommended that stakeholders should be better enabled in terms of capacity and resources to ensure adequate engagement in the process. Other participants warned of consultation 'overload'. It was also recommended to inform stakeholders at the beginning of the process before seeking their engagement at a later stage. This would allow them adequate time to consult and make submissions where appropriate. Key stakeholders recommended to be included at this stage included the different government departments i.e. DECLG, DAFM, DCENR as well as the EPA and the local authorities. Citizens could be consulted through the PPNs.

Stage 6: Formal Adoption

Options discussed amongst the participants for adopting the EMMS framework included both statutory and voluntary processes. It was suggested that the framework could be progressive i.e. initially start as a voluntary instrument to get agencies and people involved and then implemented as statutory. It was noted that a voluntary instrument would require much more stakeholder engagement. Conversely, one participant recalled an example where consultation was not conducted appropriately for a statutory plan process which resulted in the annoyance of stakeholders.

Any type of implementation would require aligning city and county development plan policies and recommendations and incorporating the framework into these plans. Different stakeholders across the bay would need to feel part of the governance mechanism.

There was largely consensus on the time period the framework should cover i.e. six years, similar to county development plans. It was also recommended that some sort of review could be carried out to see how all development plans and strategies are aligned.

In terms of compliance with environmental regulations, it was noted that the legislation generally stipulates who is the relevant authority with responsibility for a particular matter. Notwithstanding, it was implied that the framework could also be used as a health-check i.e. to determine which bodies were undertaking which role and how they were faring.

Stage 7: Implementation

When the participants were asked who should oversee the implementation of the EMMS framework within Dublin Bay, there were a number of different suggestions provided which included: a revolving role between the three local coastal authorities, the regional assembly and mini-sub groups within an overall Dublin Bay partnership. Others suggested that actions needed to be identified first with certain people and agencies assigned responsibility for these. It was noted that different responsibilities would be required at different levels i.e. strategic and local scales. Local expertise however, would be necessary at both scales. The transposition of the MSP Directive into Irish law provided an opportunity to address these issues.

The main challenges identified by the participants in relation to implementation were funding, government reorganisation, political support, the co-ordination of three local authorities and interventions from Europe.

Participants felt that a partnership approach between the three local authorities, Dublin Port, DAHG/NPWS and DECLG should help resource the framework both financially and operationally. As to who would find the framework beneficial and use it, the participants felt it was unclear what the framework was actually trying to achieve. As one participant stated 'it sounds like its all things to all men at the moment....it's far too wide ranging'. Other participants thought that the stakeholders in the Dublin Bay area could use it for monitoring and information exchange, while also using it to interrogate whether agencies involved were fulfilling their obligations. It was suggested that interest groups would find it beneficial if they were adequately represented.

Stage 8: Monitoring and evaluation

The review of the EMMS framework should be in line with development plans it was suggested i.e. reviewed every 4 years and 2 further years to finalise and publish. Some participants again envisaged the MSP Directive providing guidance in this context and until then, there were a lot of uncertainties about implementation.

As part of the review, initial targets and objectives would need to be reviewed and monitored. These included environmental, social and economic objectives.

The evaluation of management strategies would require further information and research. Suitable international comparators and best practice could be identified, reviewed and used to make recommendations. The use of key performance indicators was also recommended while others felt that a complex evaluation model was necessary.

Defining and analysing future coastal conditions proved to be a difficult consideration with some participants recommending the use of the precautionary approach and others suggesting appropriate governance and environmental monitoring. Other recommendations included an evidence-based approach and the incorporation of a one-stop shop.

With regards to stakeholders being consulted as part of the review, suggestions included the local authorities, regional assembly, PPNs, EPA, Irish Water, NGOs, universities and other interested parties.

Stage 9: Adaptation

In relation to future changes required as part of the ongoing development of the EMMS framework, some participants recommended adapting to new legislative changes i.e. transposition of the MSP Directive. Other emerging strategies such as the national planning framework (NPF), regional social and economic strategies (RSEs) and development plans would also have to be considered and the framework adapted where appropriate. A synthesis of all the aforementioned data and information for each of the stages was deemed necessary to allow for any review and adaptation of the framework. Any changes would also have to comply with any legal requirements.

The stage at which the next version/ edition of the EMMS framework should be commenced proved a difficult question among the participants with some stating that it would be dependent on how long it takes to get the framework up and running and reviewed.

5.1.2 Key emerging themes

From Task A it appears that populating the framework proved challenging however, a number of key ideas emerged as follows:

1. Responsibility for the framework could be managed by either a new body or by a new partnership with one agency taking the lead
2. Stakeholders should include: the general public; economic, environmental and community interests; tourism and recreation sectors; coastal safety bodies as well as the local authorities, relevant government departments and agencies

3. Overarching goals should be sustainable development and compliance with European Directives
4. Funding of the EMMS framework would be dependent on the governance structure put in place.
5. Ecosystem services approaches could propose novel ways to levy and access progressive funding streams
6. Efficiency and effectiveness were key to building commitment to the process
7. There were multiple priorities for the bay including access, cleanliness, sustainability and flooding
8. A central portal of data and information was considered a useful tool to help with management
9. The framework could be progressive i.e. initially start as a voluntary instrument to get agencies and people involved and then implemented as a statutory instrument
10. Main challenges to implementation were funding, government reorganisation, political support, the co-ordination of three local authorities and interventions from Europe

These emerging themes will be taken forward in terms of: examining governance and institutional arrangements; potential funding models; stakeholder/ citizen engagement; management priorities; data collection and validation; reviewing current indicators and monitoring systems; and the potential implementation of the framework through voluntary and statutory provisions.

5.1.3 Task B: Trialling the framework of EMMS using development scenarios

The second task, Task B: *Trialling the framework of EMMS using development scenarios*, incorporated the use of two different development scenarios to apply the framework of EMMS using spatial data collated from a number of sources for the case study area. The aim of this task was to use the judgement of the stakeholders to determine if the framework was robust enough to be used as a decision-making tool.

The two development scenarios were as follows:

- Development Proposal No. 1 - Tidal Energy Generation
- Development Proposal No. 2 – Deep water berth and warehouse development

A summary of the issues raised during this task are summarised in Table B, Appendix 4 and discussed in the following sections.

Development Scenario 1: Tidal Energy Development

The proposal was to construct and operate an offshore tidal generating station consisting of up to 5 tidal turbine generators (TTGs) and associated cabling located on the seabed in the Shannon Estuary. Onshore associated infrastructure was proposed at Knockbrack East, Carrig Island.

Priorities

Participants noted that the main economic priority in the area was Shannon Foynes Port and its associated activities. This was considered important in terms of job creation and employment. Tourism within the area was another economic priority and while perhaps it may not be significant, it was something to bear in mind. The ferry route was another identified economic priority for the

Shannon Estuary; not just for industrial purposes but for access and tourism. Local shellfish farming and harvesting was considered important for the local economy.

In terms of environmental priorities, international and locally designated sites were of significant importance. Other suggested priorities related to tidal resource and landscape and seascape value. Social priorities for the area included sports and recreation; while safety was also considered a priority for the area.

Stakeholders

The suggested list of stakeholders appended to the information pack was considered sufficient. It was emphasised that the DECLG and the Minister, in particular, were key stakeholders for this type of development proposal, while local fishermen were also mentioned.

Identifying impacts

When asked how to identify potential impacts from the proposed development on the estuary, participants referred to European directives for environmental assessments i.e. Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA). In particular, it was noted that when submitting a planning application for this type of development, an Environmental Impact Statement (EIS) would be required which would include information on a range of impacts such as visual, noise, biodiversity, seabed, and tidal. An economic impact assessment or cost-benefit analysis was likely to be included which would consider the effects on local businesses. Navigation and safety assessments would also be required. Therefore a range of full surveys was deemed necessary to accompany the planning application.

Other ways of identifying potential impacts included the use of GIS tools such as the EPA envision mapping facility. It was implied that sensitivity mapping could be produced from such available data sets. The Marine Institute's [Marine Atlas](#)⁷ was also recommended as a tool to assist with identifying impacts however, it was not always clear how to access this data. County development plans were another resource to retrieve information on potential impacts.

Spatial Conflicts

Similarly to identifying impacts, participants advocated using GIS tools to detect spatial conflicts. This could be supplemented with information on wave, wind and tidal resources and seabed condition. Using the maps supplied with the task pack, participants identified potential spatial conflicts with designated sites, fisheries, archaeology and areas susceptible to flooding. It was also advised to consult with stakeholders as well as referring to the Shannon SIFP for information on potential conflicts.

Indicators

In relation to indicators to determine change in the estuary as a result of the proposed development, participants felt that there were already a number of environmental indicators available which could be used i.e. indicators associated with the MSFD, WFD and Habitats Directive. It was important to commence with a baseline and use these indicators to monitor any change in conditions. Examples

⁷ <http://atlas.marine.ie>

of suggested indicators included biodiversity status/ species numbers, channel depths and bathymetry, flood risk and economic impacts such as vessel collisions, oil spills, shipping disruptions or delays. It was noted that a construction management plan would also be required.

Monitoring impacts

Participants felt that the monitoring of impacts was related to the types of indicators used i.e. number of species, water quality and flow etc. However, it was noted that the impacts may not be site specific so it was difficult to determine the extent of the area to monitor. The NPWS and EPA both carried out monitoring in the Shannon Estuary so it may be possible to access this data. Other participants remarked that it was not possible to monitor all environmental, economic and social impacts and therefore it was best to select key indicators which were easily monitored and quantified. Another suggestion was to look at other examples elsewhere and learn from their assessment and monitoring experience e.g. the renewable energy site in Co Mayo.

Mitigation

Recommended mitigation measures included the use of best available technology, replacement habitats, habitat protection measures, compensation and landscaping measures to mitigate visual impacts. The design and shape of the proposed infrastructure could also be important in terms of visual effects.

Decision

Both groups of participants felt that there was insufficient information available to make a decision on the proposed development. It was suggested that more detailed information including full surveys was required. The information provided however, was deemed useful for the preliminary and site selection stages. Without more detailed information, decision-makers would have to err on the side of caution and apply the precautionary principle.

Dublin scenario

Participants were in general agreement that there were different and very specific issues that could arise with a similar proposal for Dublin Bay. These issues related to the intensity of port activities, the risk of flooding and the density of population surrounding the bay. As a consequence, there would be more urbanised issues in Dublin Bay as opposed to the rural, and more isolated, context of the Shannon Estuary. There was also a tradition of local residents' involvement with bay issues particularly, in relation to visual and noise impacts. Safety and impacts on local leisure activities would be an additional consideration. The extra environmental protection i.e. UNESCO Biosphere designation would also be a key issue.

Development Proposal No.2 –Deep Water Berth and Warehouse Development.

This scenario proposed the operation of a deep water berth and construction of warehousing facilities at Foynes Island, Shannon Estuary to support the offshore renewable energy industry. Works included upgrading and extension to the existing disused pier and the construction of an 8,000sqm warehouse facility to cater for the storage and assembly of renewable energy devices.

Priorities

In terms of economic priorities for the area, participants felt that job creation and employment within this rural, peripheral location would be important. Socially, the provision of employment would help a more robust society address issues such as low incomes, out-migration etc.

With regards to environmental priorities, the SAC and SPA designations were significant as was water quality in accordance with the WFD. It was also highlighted that there should be no hierarchy of development needs or rights of development as all developments have potential negative and positive implications. All development proposals should be assessed according to the appropriate legislation and policies.

Stakeholders

The list of stakeholders that was appended to the task information pack was regarded as sufficient in terms of identifying key interest groups and individuals with the addition of the following: Shannon Whale and Dolphin Group, coastguard, River Shannon Protection Alliance and communities and citizens within and beyond 500m distance from the locality of the proposal (i.e. strategic importance of development).

Identifying potential impacts

The application of appropriate assessment and having regard to the SAC and SPA conservation objectives would be a good starting point to detect potential impacts. In terms of economics, this was considered straight-forward with the application of a cost-benefit analysis. Non-monetary benefits and impacts however, would prove more difficult to determine. Pre-application consultation with stakeholders would be useful. Having regard to the county development plans, local area plans etc. for the area would assist with identifying potential impacts. In terrestrial planning it was implied that decision-makers have a set of parameters to consider and these tend to be two-dimensional in a spatial context i.e. above or below land. In marine planning, there were three-dimensional parameters i.e. sea-bed, water column and water surface contexts to consider so it was difficult to appraise the land-sea interactions. Better integration was needed.

Spatial Conflicts

The maps available within the task scenario pack were used to highlight potential spatial conflicts with a number of estuarine users and uses including: water sports, archaeology, shipping, navigation and Natura 2000 sites. It was recommended that sensitivity tools or maps could be generated to assist with identifying spatial conflicts.

Indicators

Similar to the first scenario, participants felt that there were already a number of environmental indicators being used under the various European directives that could be utilised. These indicators included those used to report under the WFD, MSFD and Natura 2000 conservation objectives such as the monitoring of a natural range of habitat, and the area it covers to determine its stability.

It was recommended that where data is available a baseline of status should be established first and then monitored to detect change. Understanding the baseline conditions would be important to

determine what is tolerable or acceptable. Spatial modelling was also suggested as a useful tool to identify and monitor change in the estuary i.e. habitat extent or range.

Monitoring impacts

It was suggested again that there were already existing monitoring mechanisms in place which should be utilised and adapted where appropriate i.e. monitoring in compliance with WFD, MSFD and Habitats Directive.

Mitigation Measures

In terms of mitigation, some participants recommended a change in the jetty layout and orientation. Design and orientation of developments could therefore be used to reduce potential visual, environmental and safety issues.

Decision

Similar to the first scenario, participants felt that they were unable to make a decision due to a lack of detailed information. The framework was considered more useful for the early stages of planning i.e. at pre-planning consultation to scope potential issues. In principle however, it was deemed that the proposed development would not have major adverse impacts or result in 'insurmountable effects'. Notwithstanding, further information would be required or otherwise application of the precautionary principle applied.

Dublin scenario

Participants felt that in Dublin Bay the proposed development would face a number of challenges. These challenges related to the intensity of use within the bay and, in particular, the port area. It was likely that competition for space would be a major public consideration and concern. Similarly to the first scenario, it was remarked that local residents within Dublin Bay have been quite vocal when it came to matters within the bay and could therefore be quite concerned with such a particular proposal in relation to environmental and visual impacts.

5.1.4 Key emerging themes

The emerging issues from Task B are:

1. The proposed framework could be a useful tool to scope initial issues and assist at pre-planning application consultations. It does not contain a proper evaluation mechanism and more detailed information will be required. If further developed, the framework has potential to aid decision-making but at present is too preliminary to be considered.
2. A range of environmental indicators and monitoring systems already exist as per the reporting criteria for the different EU directives which ought to be used. It would appear that the reporting is carried out separately, indicating a lack of co-ordination between the responsible agencies. In addition there is a lack of information on social and economic impacts.
3. There is a lack of knowledge and guidance available to determine cumulative and in-combination impacts from proposed developments on the coastal environment. Sensitivity

mapping was suggested as a tool to address this deficit, though this would require local expert knowledge and input.

4. Terrestrial planning already has formal decision-making systems in place which involve assessing development proposals against a range of parameters. The marine planning system is less developed and more fragmented which makes it increasingly difficult to consider land-sea interactions. More integration between the two systems is therefore needed.
5. There is a need for a better participative process to bring stakeholders together. The establishment of Public Participation Networks (PPNs) is seen as a potential opportunity to address this problem. The pending transposition of the MSP Directive may also require the establishment of coastal partnerships or some form of stakeholder engagement medium, which could also result in adding yet another additional layer to the system.
6. The scale of different management systems is complex within the coastal zone. For example, the Natura 2000 designations tend to be site specific and local in nature; the WFD manages on a river basin and regional level; and the MSFD is applicable at the strategic Irish/Celtic Seas level. This can have implications for establishing common indicators and monitoring mechanisms as well as carrying out stakeholder consultation.

The aforementioned issues will be taken forward in the next stage of the analysis particularly in terms of what is achievable, realistic and relevant for the framework.

5.1.5 Refining the EMMS framework

The final exercise of the workshop comprised an open floor discussion on how to refine the EMMS framework. Following Tasks A and B, it became apparent that the participants were unsure as to what the framework was aiming to achieve and how it could be used. Its purpose was not likely to be a decision-making tool. As one participant noted, the new regional assemblies are responsible for preparing local economic and community plans (LECPs) within their area. These plans will be 'action-driven and time-bound' and will be overseen by the Local Community Development Committee (LCDC). Coming out of this will be a public participation network (PPN) which is a model established for local authorities to have better engagement with their citizens. Through this forum, the proposed EMMS framework could be applied to assist with stakeholder engagement and inform plan-making at this level, it was suggested. This would be very different from using the framework as a decision-making tool.

From Task B it was evident that the proposed development would have to go through a statutory planning process which uses a policy-focused structure and guided by existing legal responsibilities. Instead, it was considered that the proposed EMMS framework would have to go through a number of steps before it could assist that process. Alternatively, it could be a tool to help inform the development-plan or the policy-making process.

It was noted that in Ireland there is a policy vacuum with regards to the land-sea interface i.e. a lack of integrated coastal zone management. The proposed framework could help to bring stakeholders with terrestrial and marine planning interests together, similar to what happened in the Shannon Estuary as part of the development of the Shannon SIFP. The pending transposition of the MSP Directive into Irish legislation was discussed in terms of its potential to guide management within this interface area. However, it is noted that the MSP Directive does not define the 'coastal zone'

and it is therefore up to the Member States to define this themselves (Lonsdale et al., 2015). One suggestion was using the framework to bridge the gap between the land and sea interface.

In terms of progressing the EMMS framework, it was observed that there was a need for more socio-economic information and that the proposed framework could be more holistic in this regard. In terms of other data gaps or lack of information, participants highlighted that, in general, there appeared to be a dearth in non-commercial and recreational data on activities such as walking. Similarly, tourism information was not so readily available; for example, the number of hotel rooms used for holiday purposes. In terms of lack of knowledge rather than data gaps, it was suggested that there was a lack of expertise available on addressing cumulative impacts and ecosystem resilience.

When asked if the framework could be used to assist with cumulative impacts, it was acknowledged that it might be useful as a starting point or a 'check-list' however, a more detailed methodology would be required. The framework could therefore be used to provide information on how you would address cumulative impacts or perhaps become a methodology for setting out the steps to undertake such an assessment.

This exercise clearly raised more questions than solutions to refining the proposed framework which will be carried forward as part of the next stage of the research analysis, particularly in terms of refining its functionality and proposed purpose and what potential it has in delivering integrated management.

6. Case Study Initial Outcomes

The IMMERSE Dublin Bay workshop provided a forum to expose the proposed framework to the critical evaluation of key stakeholders.

A number of key questions were raised by participants in the workshop which will need to be addressed before the framework can be progressed any further. These are discussed in the sections below.

What is the framework?

The workshop highlighted that the aims of the framework need to be more clearly articulated. Therefore it will be imperative to refine the purpose of the framework and its intended audience. In particular, one participant remarked 'it sounds like it's all things to all men at the moment.....I think it's far too wide ranging'. The focus of the framework needs to be narrowed and given more detail.

It was also proposed that the framework could be used to bring terrestrial and marine stakeholders together. Conversely, it was also questioned why different sectors needed to be brought together. One participant insinuated that this would be impossible: 'you will never get everybody in the room from different sectors wanting to have a meeting together because they are going to want to meet in terms of their own sector'. Integration will require a co-ordinated and holistic approach to management.

Resourcing the framework

The way the framework is resourced and who is responsible for its implementation were key issues discussed during the workshop. In terms of overseeing the framework, there were debates around who could take responsibility for the framework and how this could be resourced.

A number of suggestions were provided in relation to who would be responsible for the management of the framework. These included the local authorities, the EMRA and the EPA; while other ideas included the establishment of a new independent body or partnership. With this type of partnership, it was proposed that you could have one lead authority. A planning authority was considered the most suitable to take the lead given its competency in planning and community engagement. Participants also recommended a community-focused approach as a pre-requisite to setting up any partnership.

With regards to resourcing the framework, this would be dependent on the governance structure put in place. It was suggested that that a single entity was needed that is democratic and included a mixture of people who avail and use of the bay. The funding would be in accordance with the normal taxation structure of that body. It was noted however, that Ireland has a centralised governance structure and as a consequence, local authorities are limited in what they can do with regards raising revenue. It was also acknowledged that any funder would inevitably become a key stakeholder and was therefore likely to shape and direct the philosophy of the framework.

Stakeholder participation

It became apparent from the workshop that there are a wide range of stakeholders with an interest in the management of Dublin Bay, as evident in the work of the Celtic Seas Partnership and Dublin

Bay Biosphere. For the future application of the framework within this area, a number of sectors would need to be engaged including the general public and marine economic, environmental and social sectors. These would be in addition to the relevant government departments and agencies with responsibility for coastal issues.

It was highlighted on a number of occasions that local residents and community groups within Dublin Bay tend to be quite active in planning and development consultations. Some examples provided were in relation to particular developments within Dublin Bay i.e. Alexander Basin Redevelopment, the incinerator at Poolbeg and flooding infrastructure at Clontarf. This type of active engagement indicates the value placed on the environment by the local community and their interest in its management.

It was suggested that stakeholders needed to be informed from the beginning of the process and 'kept in the loop' on progress. One participant indicated that people not being informed was one of the most regular reasons for planning objections: 'if people feel they are not involved, they react and that applies to...everything, virtually.' Worse still, it was perceived by a participant that Dublin Bay at the moment was controlled by the institutions and 'it seldom seemed to be owned by those for the benefit of the people of Dublin'. By involving stakeholders at the beginning of the framework in setting out a shared vision and goals, it was suggested that this would build commitment to the process as well as providing ownership.

Status of the framework

Once the purpose of the framework is defined, issues around its implementation were a recurring issue within the workshop. Some participants were mindful of adding another layer of administration to an already complex governance structure for estuarine and coastal management. It had been noted on several occasions that legislation already exists under the WFD, MSFD, Floods and Habitats Directive and this should be used; or the bodies utilised to prevent creating additional governance and institutional layers. Otherwise it had been implied that you would end up with 'a mish-mash of everybody and without any clear governance'.

It had been suggested that the development of the framework could be an iterative process whereby it is introduced as a voluntary instrument to get stakeholders on board; and then implemented on a statutory basis, similar to the Shannon SIFP.

Data and information

Participants felt that there was good availability of data on Dublin Bay uses, users and environmental status. A number of on-going projects were mentioned in relation to data gathering and included a marine heritage study being conducted by Trinity College Dublin as well as the Celtic Seas Partnership and Dublin Bay Biosphere work. This was useful in terms of providing information on historical as well as current uses and uses within the bay.

In terms of environmental status, there was general consensus that sufficient information was being collated as part of compliance with the EU directives i.e. WFD, MSFD and Habitats Directive. Many participants recommended availing of this information and adapting it for use within the framework to avoid duplication of effort and ensure efficiency in monitoring and reporting.

With regards to data gaps, it was highlighted that information on social and economic conditions was lacking as well as data on recreational or non-monetary uses of the bay. Notwithstanding, it was noted that international research was ongoing in relation to socio-economic profiling of marine goods and services which could prove useful. This was a requirement of the MSFD as well as an expected parameter with pending marine spatial planning transposition into Irish law.

Whilst not considered as a data gap *per se*, it was recognised that there was little guidance available on addressing cumulative impacts and in-combination effects for coastal developments. This was more of a lack of expertise and knowledge, rather than data. The use of best practice from other estuarine and bay areas was recommended to assist with these types of assessments.

Communication

Communication between the various stakeholders was considered imperative to integrated management. It was felt by a number of participants that government departments and agencies were operating within silos, with little interaction with each other. In particular, it was implied that there was a lack of consultation between the departments and local authorities. One participant stated '*...they didn't even talk to the staff who were managing on the ground. So don't make out it's integrated because it's not*'. However, as another participant noted: '*It becomes a thing of coordination and about integration and they are easy words to say and harder words to achieve*'.

Communication between planning officials and the general public was also considered weak as residents felt that they were kept poorly informed (as noted above) regarding developments within the bay area. Therefore communication and raising awareness of Dublin Bay matters with all stakeholders will be an important consideration in the development of the EMMS framework.

Conclusions

The aims of this working paper have been to:

- provide an overall account of the workshop proceedings and key emerging themes;
- summarise stakeholders' feedback and critique of the proposed framework; and
- identify potential benefits and constraints of the framework as well as possible challenges to its future use and suggestions on how to overcome these.

The exposure of the framework to the Dublin Bay stakeholders at the workshop generated significant and valuable feedback in terms of determining what elements worked, did not work and where additional research is required.

As highlighted in the research so far, the development of integrated coastal management within a national policy vacuum may prove challenging. Without appropriate legislation and designated governance and institutional responsibilities, it will be difficult to facilitate a joined-up approach to management and monitoring within a shared resource such as Dublin Bay. The potential to continue the fragmented approach becomes a real risk. In the past, previous attempts at developing management frameworks for Dublin Bay were unsuccessful due to a lack of implementation, as happened with the Dublin Bay Task Force (O'Hagan, 2010).

The workshop highlighted a number of emerging themes, in particular, the resourcing of the framework. This will be dependent on who takes responsibility for overseeing its preparation and implementation. The preparation of the framework could encompass a partnership approach with one body taking the lead responsibility, similar to the Shannon SIFP. A bottom-up approach which involved the engagement of a Public Participation Network might be worth exploring further as an alternative to the coastal partnerships which exist in the UK.

Stakeholder participation will be key in developing the framework. Stakeholders should be identified and informed as early as possible in the process. They should also be involved in sharing a vision and objectives as this builds commitment and acceptance of the process as well as providing ownership. It is recognised that 'a shared vision is the first step in encouraging people who may not have trusted each other, or who protected their turf, to begin to work together. It creates a common identity and a platform of understanding' (Kolzow, 1999).

Generally, it is acknowledged that local authorities and local citizens want the same for their coastal areas i.e. a healthy, safe and sustainable resource. This could be the basis of a shared vision or goal. Stakeholders should also be enabled in terms of capacity and resources to ensure adequate engagement in the process. Through the availability of funding and resources, citizens can actively contribute to the stewardship of the bay.

It is evident that there are a number of emerging issues which need to be examined further. Indeed the title of 'framework' at this stage of the research is ambiguous and means different things to different stakeholders which can lead to further complications. The focus of the framework needs to be narrowed and fleshed out with more detail. For example, if it only concentrated on monitoring, it could be used as a 'health-check' on who is monitoring what and how the bay is faring in sustainability terms. This could encompass information on socio-economic conditions as well as environmental status.

An alternative purpose of the framework might be to inform the plan-making process. With the pending transposition of the Marine Spatial Planning Directive, there may be an opportunity to become a bridging instrument between the land and sea interface. This could also assist with the preparation of the new Local Economic and Community Plans (LCEPs) in association with the Public Participation Networks (PPNs) for coastal communities.

Therefore it may be more appropriate to explore a number of transition pathway options which considers delivering integrated management within: the current status quo; short-medium term transitions in national legislation and governance arrangements; and within the longer-term as part of a visioning exercise including significant legislative, institutional, environmental, economic, technological and societal change.

It should be noted that this paper is the second part of *Stage 2: Data Gathering and User Engagement* and will lead into *Stage 3: Analysis, Synthesis and Dissemination*. Therefore this paper is an indication of where the research needs to go next and what are the key emerging themes to be examined.

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Appendix 1

Dublin Bay Stakeholder Workshop Attendees on 9th September 2015

	Surname	First Name	Representation
1	Bradley	Malachy	Eastern and Midland Regional Assembly
2	Conway	Jim	Eastern and Midland Regional Assembly
3	Cronin	Richard	DECLG
4	Dempsey	Suzanne	Irish Water
5	Dineen	Karen	EPA
6	Down	Marie	Fingal County Council
7	Foley	Walter	Eastern and Midland Regional Assembly
8	Freeman	Nuala	SWAN
9	Harris	Maryann	Dublin City Council
10	Healy	David	Councillor
11	Lacey	Dermot	Councillor
12	Lally	Mary	DTTAS
13	Maitra	Raja	Howth Fishery Harbour
14	Moran	Suzanne	ESB
15	Nairn	Richard	Natura Consultants
16	Nixon	Eugene	Marine Institute
17	Roche	Jenni	Dublin City Council
18	Ronan	Marisa	Trinity College Dublin
19	Edward	Hanlon	DECLG
QUB Facilitators			
20	Flannery	Wes	QUB
21	Jenkinson	Karen	QUB
22	Ellis	Geraint	QUB
23	Kelly	Christina	QUB
24	Muinzer	Tom	QUB

Appendix 2

IMMERSE Dublin Bay Stakeholder Workshop Agenda - 9th September 2015



Integrated Management and Monitoring of estuarine and coastal ecosystems (IMMERSE)

IMMERSE Dublin Bay Stakeholder Workshop

Ballymun Civic Centre, 9th September 2015

Agenda

10:00 – 10:30	Registration
10:30 – 10:45	Introduction to Dublin Bay Stakeholder Workshop
10:45 – 11:00	Celtic Seas Partnership (CSP) in Dublin Bay – update by Walter Foley, Project Officer for CSP
11:00 – 11:20	IMMERSE Overview – Progress and Findings to date
11:20 – 13:00	Task A – Advancing the proposed framework of Environmental Management and Monitoring System (EMMS)
13:00 – 13:25	Introduction to Task B (afternoon exercise)
13:30 – 14:05	Lunch
14:10 – 15:20	Task B – Using development scenarios to test the proposed framework of EMMS
15:20 – 15:50	Task C - Refining the EMMS framework
15:50 – 16:00	Workshop Wrap-up
16:00	End of Workshop

Appendix 3

Table A: Summary of Participant Responses to Task A

Task A: Introduction to proposed framework of EMMS – Summary of Responses		
Questions	Answers	Data & Information sources
Stage 1 - Goal setting - Vision and Objectives		
Q1: What geographic extent of Dublin Bay should the framework cover?	<ul style="list-style-type: none"> • Multi-criteria decision • Perceived, administrative, ecological, legal/statutory considerations. • <i>'No right answer'</i>. • Dublin Region – strategic planning. Dublin City Council (DCC), Dun Laoghaire Rathdown County Council (DLRD CoCo), Fingal CoCo and South Dublin County Council (SDCC) – administrative councils. • Biosphere has core, buffer and transition zones. • Dublin Bay SPA/ SAC with zones of transition. • Eastern and Midland Regional Assembly (EMRA) extent or revolving across 3-4 LAs. • Marine Spatial Planning (MSP) Directive – when transposed into Irish law. • Water Framework Directive (WFD) boundaries, Flood Risk Management Plans. 	
Q2: Who should be the establishing/ lead agency in charge of an EMMS framework i.e. for Dublin Bay?	<ul style="list-style-type: none"> • Local/ planning authorities, EPA, Fisheries..... • Need an independent body/ partnership • Cross-over between who takes charge. • Do we need an independent leading agency? • Lead authority – planning authority - competent in planning and community engagement. • Lead authority working with Dublin Port, ESB, Fisheries etc. • Problem with a separate group – it might be seen as an extra 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	layer. <ul style="list-style-type: none"> Dublin Bay partnership that would sit on the Local Community Development Committee (LCDC). 	
Q3: Who are the main stakeholders?	General public, diving, sailing, kayaking, wind surfing, angling, fishing, swimming, residents and communities on the bay. Walkers, coastguard, Oil and Gas sector. Partners in Biosphere: DCC, Fingal Co Co, DLRD CoCo, Dublin Port, DAHG, NPWS, RNLI, ESB, Anglers Association, fisheries, Fáilte Ireland, Irish whale and dolphin group (IWDG), DECLG, DAFM	Biosphere contact list Living Bay Forum Business Community Harbour Master has list of active fishermen
Q4: What should the EMMS set out to achieve i.e. what should be the overarching goals and objectives?	<ul style="list-style-type: none"> Minimum legal requirements – monitoring. Social, economic and environmental development i.e. sustainable development. Economic expression Achieve Good Environmental/ ecological Status (GES) - Marine Strategy Framework Directive (MSFD) & WFD All stakeholders Ecosystem based approach Well-being Protect/ conserve designated biodiversity Promote CFRAM, Climate Change, Air Quality, Human Health. 	WFD and MSFD reports
Q5: Who should fund the development of an EMMS framework in Dublin Bay?	<ul style="list-style-type: none"> Single government structure needed - democratic, mixture of people who avail and use the bay and whatever normal taxation structure that body has e.g. linked to a mayor and a single Dublin Regional Authority. Look at other bay management examples from around the world e.g. Baltimore. Celtic Seas Partnership (CSP) - deliver some ecosystem service assessment – capitalising on natural capital values. 	River Basin Management Plan

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<p>Should move towards financial incentives and economic models i.e. green capital funds.</p> <ul style="list-style-type: none"> • Irish government structures are likely to shape/ dictate core aspects of funding structures. • Funders will become stakeholders. • Plans and directives already in place (River Basin Management Plans (RBMPs), WFD) –system should be within that overall catchment - not another framework in where people don't know what they are complying with and who is putting in monitoring where. • Already 9-10 bodies with responsibility for Dublin Bay. Need one single body. • Funded through targeted actions 	
<p>Q6: How do you build commitment to the EMMS process in Dublin Bay?</p>	<ul style="list-style-type: none"> • Democratically mandated body may be required to build EMMS process – not a vested interest. • To build commitment people need to see efficiency and effectiveness and slot it under their strategies and objectives. This was deemed difficult when different government departments and agencies don't talk to each other. Lack of integration effects commitment. • More joined-up thinking needed • Inclusiveness • Ownership/ involvement/ citizen science. 	
<p>Stage 2 - Understanding Ecosystem Status i.e. state of Dublin Bay</p>		
<p>Q1: Do you know what is the condition/ state of Dublin Bay – in environmental, economic and social terms?</p>	<ul style="list-style-type: none"> • Status is 'actually very good'. • Only a couple of Integrated Pollution Prevention and Control (IPPC) licensed facilities – ESB at Poolbeg and another across the bay. • Difficult to find info about status of bay. Not sure where to look for information. 	<p>EPA website on bathing waters – SPLASH EPA – State of Environment Doc. EPA- GISEA tool Irish Whale and Dolphin Group - lots of info.</p>

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Not sure what monitoring takes place? And where you can access the data. • Need for more resources like the SPLASH website – simple, user-friendly – no need to go trawling through data. 	<p>Fáilte Ireland has a lot of info on assets and amenities but not publicly available or in a user-friendly format.</p>
<p>Q2: Do you know the historic, present and future uses and users of Dublin Bay? Is this information available?</p>	<ul style="list-style-type: none"> • Historic uses – TCD project – marine heritage mapping. Also Oceans Past Platform - https://www.tcd.ie/history/opp/ • Port Company has historic information on Bull Island. • History of dredging – Diving Bell museum. • Future uses - Dredging to accommodate bigger shipping, cruise liners. • Concern re: turbidity in water amongst recreation community from sediment dumping. Not sure if there is research or empirical data available on that. • Climate change: impact on Sandymount, residents. • Coastal erosion at Killiney • Oil & Gas in Dalkey • Future uncertain re: renewables • Tourism – Fáilte Ireland (something similar to Wild Atlantic Way) 	<p>History of dredging – diving bell museum Oceans Past Platform - https://www.tcd.ie/history/opp/ Local community groups - information on uses</p>
<p>Q3: Do you know which coastal uses and users are mapped? Which uses and users are not mapped?</p>	<ul style="list-style-type: none"> • Natural heritage –spatial data available from National Biodiversity Centre • Fingal CoCo has data hub of info on population, electoral districts • DECLG has terrestrial information re: spatial planning • Check Failte Ireland, fisheries, port, renewable energy. 	<p>TCD project – mapping marine heritage – but only commencing Institute of Engineers (ICE) – data on Port development (historical and current) Natural heritage – a lot of spatial data - National Biodiversity Centre</p>

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
		<p>Maps of Oil & Gas - DCENR.</p> <p>INFOMAR – modelling on sea level rise within the bay.</p> <p>DECLG has terrestrial information re: spatial planning - MyPlan.ie</p>
<p>Q4: What are considered the main and potential pressures within Dublin Bay? How do you know this – what evidence?</p>	<ul style="list-style-type: none"> • Climate Change • Human Activities – fishing, tourism, recreation (minor), shipping, dredging, and dumping at sea. • Stormwater, wastewater, water extraction, wastewater treatment – IPPC licenses • Pressures – litter, noise, discharges 	<p>Alexander Basin Redevelopment – Environmental Impact Statement</p> <p>Tasman Crowe – UCD Managing Dublin Bay UCD – Book – Mark Brunton EPA – www.epa.ie Valuation of marine goods and services – Stephen Hynes, NUIG - SEMURU</p>
<p>Q5: How would you examine interconnections between the different coastal users and uses? For example: shipping and fishing; renewable energy and biodiversity, recreation and aquaculture etc. What might you need to help examine interconnections.</p>	<ul style="list-style-type: none"> • Options for Delivering Ecosystem-Based Marine Management (ODEMM) approach - Activities – pressures & impacts • Expert input required • Spatial maps – cumulative impacts – Shetland example. • Capacity, resilience • Sub groups of a Dublin Bay partnership 	<p>ODEMM research - https://www.liv.ac.uk/odemmm/</p>
<p>Q6: How would you bring different estuarine and coastal sectors together?</p>	<ul style="list-style-type: none"> • Some body or a forum should bring stakeholders together: could be statutory, though not necessary. • Dublin Bay Task Force was in this role previously – something similar needs to be established. • A comprehensive body could do this that is democratically mandated. But smaller working groups should be employed within this wider context. 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses		
Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Use Public Participation Network (PPN) mechanism as part of Local Community Development Committees (LCDC). • Steering Group 	
Q7: Who are the key stakeholders within Dublin Bay?	<ul style="list-style-type: none"> • Dublin Port, Local Councils, Irish Water, Harbour authorities, community etc. • Elected representatives. • Broad range of actors and organisations. Should be thought through carefully to identify them. 	
Q8: What are the priority issues for Dublin Bay? Environmental, Economic and Social priorities.	<ul style="list-style-type: none"> • Development Plans, Regional Planning Guidelines (RPGs), NPWS priorities, Port’s Strategy – each sector/ agency have their own primary issues to put forward. All will have to be taken into account. • Different legally backed priorities - National and European legislation are valid and would need to be taken into account. • At different points in time, different priorities would come to the fore more so than others. • Priorities – 1) access, 2) cleanliness, 3) sustainability. • Priorities also evolve with time. • Flooding, development control, future uses in the bay • Functioning Port, protect economic interests balanced with environmental protection and ensure it’s a service for individual users. 	
Stage 3 – Determine Ecosystem Indicators and Reference Trends		
<p>Q1: What indicators could be used to determine the condition of Dublin Bay?</p> <p>*indicators are measures for identifying what is happening to the environment.</p>	<ul style="list-style-type: none"> • MSFD indicators • WFD indicators provide suggestions about conditions. • ESB monitor as per their IPPC licence. • Dublin Bay Bird Partnership – Birdwatch Ireland and Dublin Port. • Citizen science initiatives – these could have a role. 	<p>WFD, MSFD, Dublin Bay Bird Partnership</p> <p>Alexander Basin Redevelopment – Environmental Impact Statement NPWS – reports to EU (-2013) lots of information here</p>

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Sedimentation, rates, patterns and shifts – leads to understanding of the basic dynamics of • Ecological indicators - Comprehensive in protected habitats (SPAs/ SACs) – ongoing programme – NPWS report to EU every 6 years (prev 2013) so info available. • Economic Indicators - Boats in the bay – economic indicator e.g. from Celtic Tiger era. • Fáilte Ireland indicators on tourism. Number of cruise liners coming into the Port • Unemployment information for electoral districts would be important. • Anti-social behaviour (Policing statistics), incidents of graffiti along the DART line. • Coastal erosion indicator – at risk areas. 	<p>Public safety – Coastguard data and RNLI</p> <p>Coastal erosion – Killiney – risk area</p> <p>Anti-social behaviour – e.g. drinking is monitored on hot days. Policing indicators.</p>
<p>Q2: Are other indicators needed? Please list...</p>	<ul style="list-style-type: none"> • Exercise to be done about key bodies and what they already monitor. • Missing – non- paying/ commercial functions e.g. walking 	
<p>Q3: What baseline information is available to assess condition and trends in Dublin Bay? Is this information accessible?</p>	<ul style="list-style-type: none"> • DECLG – water quality (WFD) & marine quality (MSFD) – comprehensive links to data, initial assessment, update monitoring phase. • Nature conservation – SACs, SPAs, - 7 Years reporting cycles. • 5 x Natura 2000 - Dublin Bay • Some management plans exist (Natura 2000) • High level socio-economic – initial assessment – Irish Maritime Development Office IMDO • Fish Stock book – Marine Institute 	<p>DECLG - WFD, MSFD</p> <p>Oliver Tully – Inshore Fishing Atlas</p> <p>Nursing and spawning grounds – Irish Fisheries Stock book - Marine Institute</p> <p>Irish Maritime Development Office – shipping information.</p>

Task A: Introduction to proposed framework of EMMS – Summary of Responses		
Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> Quality of data – control of information collected. 	
<p>Q4: What are the targets and thresholds for coastal management? E.g. maximum nutrient inputs, minimum stock size limits for fisheries, endangered species conservation etc.</p>	<ul style="list-style-type: none"> General challenge is not what targets etc. are but how to resolve conflicts. Compromise required. Need to have an agreed plan and a single plan; but an agreed plan to which everybody works. Some form of fora to mediate conflicts. 	
Stage 4 - Determine Appropriate Action (i.e. impact, hazard and risk assessment)		
<p>Q1: How would you assess the impact of a proposed use on Dublin Bay? What could be considered a useful tool?</p>	<ul style="list-style-type: none"> Multiple bodies involved e.g. An Bord Pleanála – Strategic Infrastructure. Important to carry out extensive assessment - SEA, AA and EIA Site specific and long-term/ cumulative impacts – these will all have to be considered. Need some sort of maturity model – assess if management has been done in a co-ordinated manner, everyone talking to each other and long term impacts have been looked at. Consider spatial impacts i.e. climate change, sea level rise – mapping and modelling is going to be crucial. E.g. CFRAMS. Scenario modelling, evidence based models – these will be vital for future assessments. SEA – need to look at alternative – real options and modelling of impacts. Need more communication between various councils involved to assess cumulative impacts on Dublin Bay. 	<p>EPA SEA website SEA Team – Cork, Inischarra sea@epa.ie</p> <p>SEA and Energy (almost published) Link with Aquaculture Plan/ Agri 2025/ Foodwise/ OREDP – Offshore Renewable Energy</p> <p>SEA pack – advice and guidance on SEA Document on EPA website – climate change doc, cumulative effects doc, Alternatives doc., GISEA manual</p>
<p>Q2: Are there current information gaps which should be addressed to determine potential risk on the bay?</p>	<ul style="list-style-type: none"> Natural disaster Boats running aground – more accidents Chemicals on rail line Port – transporting hazardous material – has very stringent H&S protocols. 	<p>EPA – have a lot of monitoring data on water quality in the bay.</p> <p>Acclimatise – UCD (proposal stage) - Project proposed on climate change</p>

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Incinerator • Effluent from the treatment works needs to be monitored – can cause flooding if the whole system is surcharged and then overflow • Classification of beach – bathing quality • Climate change – impacts on property, availability of land would be reduced for infrastructure, impact on roads, transport. Inward migration would put more pressure on resources. DART line would suffer. • Climate change modelling needs to be highlighted. • Dredging – possible impact on SACs, reefs, harbour porpoise, turbidity of water, recreation, increased sedimentation. • Access/ freedom to information e.g. Port dumping at sea proposal advertised on bank holiday weekend. • Tourism/ property development - Privatisation of public spaces. • Cumulative impacts - info on some development and not others in applications. • Practitioners also have problem with working on EIS – no clear guidelines, data not readily available. • Geographical boundary 	<p>impacts on water quality</p> <p>EIS's used to be kept in ENFO –an environmental library but it is now closed – no idea where they go.</p> <p>Coastwatch – citizen surveys and local knowledge.</p> <p>NGOS/ Community Involvement – An Taisce, Birdwatch Ireland</p>
<p>Q3: Do existing governance and management options support multi-sectoral management? Give any examples.....</p>	<ul style="list-style-type: none"> • Existing governance and management – no multi-sectoral approach at present. • ODEMM approach <ul style="list-style-type: none"> - Managing human activities – risk assessment, constraints - Opportunities for synergies • Sensitivity mapping • Risk response to an event? Long-term strategies • Priorities – don't waste money on processes. 	<p>CFRAM – erosion database – EU/ OPW</p>

Task A: Introduction to proposed framework of EMMS – Summary of Responses		
Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Potential of Biosphere Partnership • Development Plan review and monitoring. 	
Q4: How would you resolve conflict situations between different coastal users and uses? What could be considered useful?	<ul style="list-style-type: none"> • Under legislation e.g. in respect to public health & safety – key legal principles. • Set objectives at a proper level and perhaps a mechanism for review. • ‘Ownership’ of the objectives is important. • People not being kept in the loop is one of the most regular reasons for planning objections. • Need conflict resolution procedures, along with early stage engagement. 	National Landscape Strategy of Ireland – applies to seascapes.
Stage 5 - Framework Preparation Phase		
Q1: How can the overall vision and aims for the management of Dublin Bay be achieved?	<ul style="list-style-type: none"> • If non-statutory at start you might get more buy-in from the beginning and progress from there i.e. adopted over time. Good example – Shannon SIFP. • All local authorities are generally on the same page – having the best interests of the bay at heart. • Difficulty is dealing with impacts E.g. Alexandra Basin Redevelopment – positive economic impacts but dumping at sea raised a lot of concern. • Everyone has the same vision. Most people want bay to be environmentally friendly/ healthy. • Conservation –encourage interaction with environment but in a sustainable manner. • Involving all organisations from the very beginning is very important and inclusive. • Find a common ground between all involved. • Monitoring of targets and what has been achieved will be important. • If there is money – everything should be on target. Directives 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
<p>Q2: How would you prioritise management options for Dublin Bay?</p>	<p>have to be complied with.</p> <ul style="list-style-type: none"> • Public safety as a priority • Ecological conservation • Safety and well being • Conflict between two priorities? Appropriate Assessment process is important for ecological conservation. • Awareness raising • How to resolve conflicts –in legislation so no need to reinvent. • How to prioritise – budgeting – political will, peoples’ willingness to compromise, understanding and willing to reach shared agreement. • Scales of issue – city-wide or local? i.e. Local communities concerned about local development. Further away from bay – less organised. • Role of media? • Through stakeholder engagement and ecosystem services. 	
<p>Q3: How should environmental pressures be managed in Dublin Bay?</p>	<ul style="list-style-type: none"> • Evaluate management options. • Look at receptors such estuarine resources and users. • Spatial overlap of uses, pressures and impacts. • MSFD – Programme of Measures in place. • Marine Environment – consultation. • Various agencies, central portal 	
<p>Q4: How do you evaluate management options/ alternatives and trade-offs?</p>	<ul style="list-style-type: none"> • Management strategies – MPAs, OSPAR, Natura 2000 • Resources are a problem for evaluation. • SEA – forces evaluation of alternatives. 	
<p>Q5: Which stakeholders should be consulted on the draft framework?</p>	<ul style="list-style-type: none"> • Stakeholders must be enabled - what resources and capacities do they have? Many ‘compete’ for a voice and can phase out other stakeholders. • Be careful of consultation ‘overload’. 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Stakeholders should at least be told that the process is starting. • Need to advertise process early and allow adequate time for stakeholders to consult and make submission. • A stakeholder plan could contribute to the clarification of the process. 	
Stage 6 – Framework Adoption		
<p>Q1: How should an EMMS framework for Dublin Bay be adopted i.e. statutory or voluntary status?</p>	<ul style="list-style-type: none"> • Progressive – start as voluntary to get agencies/ people involved and hooked and then make it statutory. • Aligning city and county development plan policies and recommendations. • Different stakeholders across the bay need to feel part of the governance mechanism. • Scope for incorporating this framework into development plans in the bay area. • Adopting the three/ four local development plans. • Take the best bits from all the projects i.e. Biosphere, CSP, IMMERSE and integrate them into existing statutory document. • Voluntary status - need much more engagement to get involved. People don't have to sign up. • Statutory status – in the past major conservation designation antagonised locals where consultation was not done. Not having top-down approach can have advantages. • Funding, research and political support required. • Wider partnership covering community interest. 	
<p>Q2: What time period should the framework cover i.e. how many years?</p>	<ul style="list-style-type: none"> • Live document – reviewed at intervals – 6 year cycles • Gantt Chart – how are all the development plans aligned? • 5-10 years? Would be useful to see that on a dashboard similar to Dublin Dashboard. 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses		
Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> Consider timeframe in line with new MSP/ National Planning Framework 	
Q3: How can the Dublin Bay EMMS framework ensure compliance with environmental regulations?	<ul style="list-style-type: none"> Are you monitoring compliance legislation or are you monitoring compliance with objectives? What are you monitoring? Relevant bodies set out under legislation must be distinguished; these also have legal obligations. Legal force/ power is a crucial regulatory tool. Framework could be a health-check of all the different bodies; what they are doing; and see how they are faring. 	
Stage 7 – Implementation		
Q1: Who should oversee the implementation of a Dublin Bay EMMS framework i.e. when it is adopted?	<ul style="list-style-type: none"> Revolving role between the three local authorities. Have one local authority i.e. planning as the lead authority. Regional assembly is an option If a lot of stakeholders are involved you could have targeted actions i.e. mini sub-groups e.g. Dublin Bay Birds Project. Identify actions/ activities and have certain people/ agencies responsible for these. Different scales and different responsibilities and management will be involved i.e. strategic high-level scale and local scale with different responsibilities at these different levels. Need local and high level expertise. MSP Directive should provide some answers. Role of the three local authorities – could they oversee these different responsibilities? Can have a general framework for estuaries and coasts but they are all different so local expertise will be required to work at local level. 	
Q2: What could be the main challenges to implementation?	<ul style="list-style-type: none"> Funding Political support 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Complications arising from 3 council areas – 3 sets of councillors, 3 sets of officials. No structure for interlinks. • NPWS – under-resourced – unable to engage effectively – never funded effectively. • Councils – question of prioritisation. • Many challenges occurred already with reorganisation amongst all agencies. • European agencies – potential intervention • Potential change in government – impact on policy. • Involvement 	
<p>Q3: How should the implementation of a Dublin Bay EMMS framework be resourced i.e. financially and operationally?</p>	<ul style="list-style-type: none"> • Partnership approach? • DECLG, Local Authorities, Dublin Port, DAHG/ NPWS • On a project basis – linked to an action framework. 	
<p>Q4: Who could use the Dublin Bay EMMS framework or find it beneficial?</p>	<ul style="list-style-type: none"> • Stakeholders in the Dublin Bay area could use this for monitoring and info exchange, as appropriate. • Useful to interrogate whether agencies involved are doing their job. • Is the onus on data collection or decision making? • Be careful that the structure of this framework is not too ‘top down’. • Can residents be more empowered? • Interest groups will find it beneficial if adequately represented – but centralised structures are important too. Interest groups should be adequately represented. 	
<p>Stage 8 – Monitoring and Evaluation</p>		
<p>Q1: At what stage should a review of the EMMS framework be carried out?</p>	<ul style="list-style-type: none"> • Currently a lot of uncertainties in relation to pending legislation. • MSP Directive will be able to answer these questions about implementation. 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
	<ul style="list-style-type: none"> • Align this with development plans – reviewed every 4 years and 2 further years to fix it up. 	
<p>Q2: What should be monitored as part of the review process and how?</p>	<ul style="list-style-type: none"> • Need to review and monitor targets and objectives - environmental, social and economic – these all need to be monitored and reviewed. 	
<p>Q3: How should the management strategies be evaluated in terms of success?</p>	<ul style="list-style-type: none"> • Comparative analysis between different areas – e.g. Europe? • Improved environmental quality • Look at other evaluation models e.g. similar areas. Not Shannon but more urban areas. Interesting research projects. • Other coastal Biosphere areas may be useful. • Best Practice – where are examples of coastal management? • Evaluating people’s appreciation of the bay including people further inland. • Monitor public awareness of environmental management in practice. • Current failure to think of the bay as a whole. • KPIs (key performance indicators) • Assign responsibility to individuals and frequency of monitoring and development. 	
<p>Q4: How should future coastal conditions be defined and analysed?</p>	<ul style="list-style-type: none"> • Precautionary approach • Governance and environmental monitoring • One-stop shop • Recreational bodies – how would they use it? Promote the activity, not control activity • Start something up and running and build on it. • How many local authorities have adopted it? Referenced in decision-making. • Who implements/ monitors/ enforces? • Marine side – how has it been referenced? EIS, RBMP? IPPC licences. 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
<p>Q5: Who should be consulted as part of the review, monitoring and evaluation phase of the EMMS framework?</p>	<ul style="list-style-type: none"> • Evidence based. • You need to define its purpose to know who to consult. • Potential to cast a ‘wide net’. • Regional Assembly • Public Participation Network (PPN) – DCC • An evaluation is only as good as what terms you give people to evaluate. • EPA, DCC, Fingal CoCo, DLRD CoCo, Irish Water • One way to determine key parties is to look at who is involved with main authority under legislation. • What scale? E.g. Gardai are involved with offences under Wildlife Act. • An Taisce – prescribed body? • Coastwatch, SWAN, Universities – non-prescribed bodies. • Wealth of information available – DCC setting up an education network. • Planning Departments. 	
Stage 9 - Adaptation		
<p>Q1: What changes might need to be made to the EMMS framework?</p>	<ul style="list-style-type: none"> • New legislation – MSP (i.e. defining boundary) • National Planning Framework, Regional Spatial and Economic Strategy, Development Plans 	
<p>Q2: What information or data might be required?</p>	<ul style="list-style-type: none"> • A lot! • Need to synthesise all the information from previous stages. • Impacts of climate change. • How long should policy cycle be? Can there be an organisation sustained over this period? 	
<p>Q3: How should changes be incorporated within the EMMS framework?</p>	<ul style="list-style-type: none"> • Compliance with legal requirements 	

Task A: Introduction to proposed framework of EMMS – Summary of Responses

Questions	Answers	Data & Information sources
Q4: At what stage should the next version/ edition of the EMMS framework be commenced?	<ul style="list-style-type: none">• Is framework continually updated as we go along?• Is it a continuous iterative process; is the tool continually updated and improved as you implement new legislation; is it ongoing?• 4 year cycle maximum seems like a good working marker.• Be aware of legislation coming down the track.	

DRAFT

Appendix 4

Table B: Summary of Participant Responses to Task B

Task B: Trialling framework of EMMS using development scenarios – Summary of Responses	
Development Proposal No. 1 - Tidal Energy Generation	
Question	Response
Q1 - Can you identify the priorities for the area in terms of environmental, social and economic enhancement?	<p>Economic - Navigational route into Foynes Port – to keep the flow of goods (materials). Strategic port – need to keep this in mind when developing. The Port has a masterplan in play, and development is underway – raising the question as to whether the development will impact on export/ import activity. Disruption of shipping lane seems to be a vital issue</p> <p>Economic -employment. Generation of future employment opportunities such as construction.</p> <p>Economic -tourism around beach areas. Not much tourism but this is something to keep in mind when considering development.</p> <p>Economic – keep ferry route open. Important not to interfere with this. Ferry route not just for industrial transportation purposes.</p> <p>Shellfish protection areas i.e. oyster – important not to interfere with these areas. Importance of the area for all sorts of aquaculture and fishing.</p> <p>Job creation, recreation (i.e. water sports) – social priorities.</p> <p>Environmental priorities - designated sites, SPA, SACs, SSIs. Tidal impacts, landscape and visual impacts.</p> <p>Environmental – are base structures going deep down into seabeds?</p> <p>Impacts of noise, wave tidal</p> <p>Marine animals – need to know types and frequencies before developing in this area.</p> <p>Safety will be a key issue.</p> <p>No proper evaluation mechanism.</p>
Q2 - Who do you think are the stakeholders in the area?	<p>List covers stakeholders. DECLG very important stakeholder especially the Minister.</p> <p>Local users (fishermen, oyster farmers) should also be stakeholders.</p>
Q3 – How would you identify the potential impacts (positive and negative) from the proposed development on the Shannon Estuary? What other tools might you need to help identify impacts?	<p>SEA – definitely have to apply this to assess impact.</p> <p>GISEA – EPA GIS tool maps individual data – for example flood risk maps, maps all enviro data/ sensitive issues in the area.</p> <p>You can produce a sensitivity map from this – using the individual data. This also known as ‘Envision’ tool.</p> <p>Great starting point to use this tool</p>

<p>(i.e. what type of assessment might be required to accompany the application for development?)</p>	<p>Environmental sensitivity map – this would be a great resource to have. Also look at Kerry County Development Plan to retrieve information. Marine Atlas website could also be used to help identify potential impacts.</p> <p>Look at planning application and accompanying documents. Visual Impact Statement, EIS - comprehensive coverage – tidal effects, impacts on ecology, biodiversity, business – aquaculture, commercial fishing, impacts on seabed Economic and Social benefit statement – would need to be reviewed. Emissions statement supporting Government decarbonisation etc. agenda. All full surveys needed Shellfish etc. impact could be very negative. Shipping and safety impacts information required. Commercial fishing ports could be impacted (but could be mitigated)</p>
<p>Q4 – How would you identify any potential spatial conflicts or compatibilities?</p>	<p>GIS tool could really address potential spatial conflicts/ compatibilities. You would need to go and get data about wave and tidal and seabed conditions and wind. This information is on Marine Atlas website. Not always sure how to access this data. Shipping lane distance could be potential problem. Environmental designations, fisheries, archaeology, flooding – potential spatial conflicts. Wastewater treatment plant may cause spatial conflict. Cost-benefit statement needed. Need to consult with stakeholders. Shannon Estuary plan could offer potential methodologies.</p>
<p>Q5 - What indicators could you use to determine a change in the Shannon estuary as a result of the proposed development?</p>	<p>Indicators that are based around the MSFD. Baseline monitoring needs to be done – noise, tidal in the construction and operation of the proposed development. Monitor species numbers, could take a long time as seasonal trends may play a part. Monitor shellfish/ oyster beds – very important. A lot of this is to do with species. Article 17 of Habitats Directive does a flora and fauna count – you could look at the grid this area is in to identify species. Flood risk needing to be monitored. Economic impacts – are there vessel collisions, oil spills; have there been delays in laying cables etc. and how this affects the business of the port? Need a construction management plan.</p>

<p>Q6 – How might impacts be monitored?</p>	<p>For species – the amount of species. Water quality and flow. The impact might not be site specific so how far do you monitor the impacts? Access EPA data – they monitor the area so you could refer to this to monitor impacts. NPWS – they may also have relevant data. Related to the environmental, social and economic indicators Pick key indicators – can't monitor everything – and pick those that are easily monitored and can be quantified. Shellfish monitoring, shipping monitoring – considered important. Need a good baseline and look at changes – look at numbers in fishing etc. Look at other in-situ examples and learn from that i.e. monitoring and assessment. E.g. Test site, French park, Mayo. Can also learn from other best practice programmes.</p>
<p>Q7–What type of mitigation measures might be required?</p>	<p>Use best available technology. Make sure to carry out construction at the right time of the year and over a longer time period so you don't disturb wildlife. Environment – replacement habitats; compensation; habitat protection measures. Plant trees etc. to mitigate visual impact. Place infrastructure underwater/ underground Design/ shape of tidal generator important Can leisure and other recreational enterprises be compensated? Consider how everyone is impacted? Economic benefit with jobs, power transmission.</p>
<p>Q8 -Is there sufficient information available to make a decision? If not, what information is lacking?</p>	<p>Not able to make a decision. Applied the precautionary principle. The level of information might be useful at initial stages – trying to identify sites that would be generally suitable. Planning application is required for comprehensive information. More detailed information would have to be submitted with the application.</p>
<p>Q9 –What is your decision and why?</p>	<p>Were alternative sites considered in the EIS? It is more environmentally-friendly than burning fossil fuels – therefore the greater good of this development should be considered. But this issue does not over-ride the decision. This development is quite small. Final decision – no, but we are positive. Need more wind & wave data. Also need detailed design of the development. Technical models are required to</p>

	<p>help make a decision. County plans etc. can be useful too. Matrix could be a first start to indicate areas for further investigation.</p>
<p>Q10. If the proposed development was planned for the Liffey Estuary/ Dublin Bay, what would be the main issues to consider?</p>	<p>In Dublin Bay shipping would be a massive issue. Flooding also. The view/ visual impact would be a main issue. Density of the population in Dublin Bay is much greater than in the Shannon Estuary – view/ seascape would be an issue. But if the development is all underwater then the view might not be an issue. SeaGen development in Strangford Lough is above water. Main issue – impact of construction depending on site of the development, traffic management etc. Dublin Bay area is very active. SACs, SPAs – depending on the position of the proposed development, there will be an issue in Dublin Bay – not to interfere with these designations. Cumulative impacts on Dublin Bay – need to consider these. Clontarf community has tradition of resisting development at the port. One is faced with an urban scenario in this case which brings with it urban resistance and protest. Major safety issues and a lot of leisure activity within the bay. Noise complaints and extra environmental protection.</p>
<p>Development Proposal No.2 – Deep water berth and warehouse development</p>	
<p>Q1 - Can you identify the priorities for the area in terms of environmental, social and economic enhancement?</p>	<p>Socio- Economics - Rural area, west coast. Periphery - High premium in economics – more jobs, more employment opportunities. Subject to economic assessment. Renewable energy – larger strategic / national importance. Knowledge gaps about current capacity & demand. Existing environmental needs – status of water. Need to improve quality as long term goal. Need to consider land-based interactions. SPA/ SAC - European importance IPPC licences in the area – mindful of cumulative and in-combination effects. Waste, recycling, waste management plan, waste water treatment etc. Subject to EIA, AA and IPPC assessments No emissions outside waste licence – information gaps. Licence to discharge only – not an IPPC licence. Type of effluent/ emissions? Longer strategic importance re: wider area. No hierarchy of needs or rights of development – matrix of needs instead – positive and negative benefits – nothing insurmountable from description</p>

	<p>Flood risk – no deterioration Moving out of the shipping lane. Archaeological Impact Assessment - fish traps Hydrodynamic changes – sedimentation Noise –plant noise, vessel noise, cranes, construction. Bubble curtains (mitigation example). Service equipment - longevity Water sports Navigation</p>
<p>Q2 - Who do you think are the stakeholders in the area?</p>	<p>Aquaculture, business, other houses on the island. NPWS, local whale and dolphin group, regulatory and advisory stakeholders e.g. Marine Institute Citizens most important – communities not only within 500m but wider catchment. Not just local authorities Businesses, recreation – angling and diving. Underwater heritage & archaeology. Utility companies. Some more important than others. Most strategic – local residents, Councils, local authority, relevant department – DCENR, Foreshore Licensing, and regulators. Commission consultants to help with engagement process. Consenting authorities. Highly organised and effective community groups who may object and are less moved by potential economic benefit. IWDG should be included River Shannon Protection Alliance Coastguard More sport and tourism users.</p>
<p>Q3 – How would you identify the potential impacts (positive and negative) from the proposed development on the Shannon Estuary? What other tools might you need to help identify impacts? (i.e. what type of assessment might be required to accompany the application</p>	<p>Environmental side – AA and look to conservation objectives of SAC and SPA – highlight potential conflicts and impacts Map layers – estuary resources and users. Static photographs and maps are only a snapshot in time – no indication of movement towards goals e.g. water quality status Need to look at the activity and the potential impact on the conservation objective – what is being protected? Missing information on conservation details – need to ask general questions.</p>

<p>for development?)</p>	<p>AA, EIA dependent on scope and scale of the proposal. Economics – straight-forward working out cost and benefit. Not simple for non-monetary ecosystem benefits. Consenting authorities – what do they base their decision on. For example, economics irrelevant to NPWS. Councils – will have regard to development plans. Economics not central. At a national level – Ministers would find the concept of long-term jobs provision attractive. Developers would lobby them rather than at a local level. Terrestrial planning – decision-maker needs to understand a set of parameters – set questions, see what answers you get back and the quality of the answers determines the next decision – further information required ? Or enough to make a decision. Terrestrial – marine interface – partly on land, partly on sea. Need to consider land – sea interactions. Terrestrial planning – 2 dimensional while marine is 3 dimensional Bigger questions – is this the right location for tidal power? Is the development pivotal in the larger scheme – making other plans viable? Need to consider better integration..... Stakeholder and pre-application consultation Climate proofed – sea level rise considerations Monitoring – sediment distribution Temperature changes – thermal Invasive non-native species Ballast water</p> <p>Tools – matrix – can be used as a ‘check-list’ exercise County Development Plans, Local Area Plans, Management Plans – take into consideration</p>
<p>Q4 – How would you identify any potential spatial conflicts or compatibilities?</p>	<p>Specific conflicts identified from maps:</p> <ul style="list-style-type: none"> • Water sports • Archaeology • Navigation <p>More info on SACs/ SPAs EIA – mitigation measures SUDs – mitigate Maintenance channel – national importance Renewable energy Need to generate sensitivity tools – spatial conflicts</p>

<p>Q5 - What indicators could you use to determine a change in the Shannon estuary as a result of the proposed development?</p>	<p>Physical, environmental and biodiversity indicators Biodiversity - e.g. number of species - dolphins, seabed condition Water quality – classical, physical, chemical parameters Need to understand baseline conditions – what is tolerable or acceptable? Sedimentation – change the flow in the channel Use of computer modelling to determine change in the channel Already monitored under Natura 2000, MSFD and WFD – use these indicators. SACs and SPAs have well-defined indicators which should be used – a lot of baseline data available for the resident dolphins.</p>
<p>Q6 – How might impacts be monitored?</p>	<p>As per existing EU directives</p>
<p>Q7–What type of mitigation measures might be required?</p>	<p>Orientation of jetty National importance determined.</p>
<p>Q8 -Is there sufficient information available to make a decision? If not, what information is lacking?</p>	<p>Need to request further information - lack of detail. More detailed assessments required – EIA, AA Could use the information for preliminary discussions – highlight the key issues which may arise and the key uses/ activities in the area. Stakeholders etc. Various directives are applied at different scales i.e. SACs – very local; WFD – regional, river basin; and MSFD – much larger scale – Celtic Seas scale.</p> <p>If you provided the developer/ applicant with a shopping list of information needed – clarity by all on what other constraints exist – yes, it could be done. Currently have a ‘to-and-fro’ system - you must have specialist knowledge to know how to work the system. Applicant drifts into lobbying and non-transparent interaction.</p> <p>Good examples – Norwegian and Scottish aquaculture licensing systems Terrestrial planning at a council level – more transparent but when you have the land-sea interface, an extra layer to consider. Sending it around silos within one organisation – let alone others..... Integration is easy word to say and harder to achieve!</p>
<p>Q9 –What is your decision and why?</p>	<p>Can’t make a decision. Further information required. Could be useful at pre-planning discussions to scope potential issues. It is possible to determine the type of impacts but no other detail on extent. In principle however, it was considered not likely to have a significant environmental impact. The framework is useful for flagging potential issues.</p>

<p>Q10. If the proposed development was planned for the Liffey Estuary/ Dublin Bay, what would be the main issues to consider?</p>	<p>Dublin Bay – intensity of activity is the primary issue. Competition for space – public voice more amplified. E.g. Clontarf flood relief scheme – local democracy preventing the scheme for progressing. Likely to be considered one of two things: 1) just a warehouse in the Docks – uncontroversial; or 2) something somewhere else in the bay and highly controversial!</p>
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