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Blue Growth & Marine Spatial Planning Scheme

Review of best practice approaches for spatial data management and integration

August 2018

Lead Partner: ABPmer

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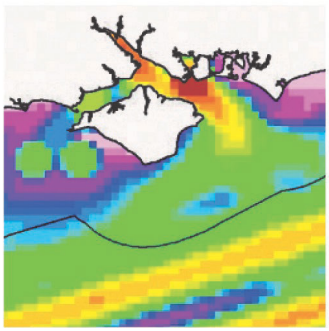
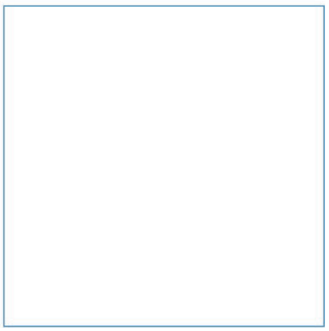
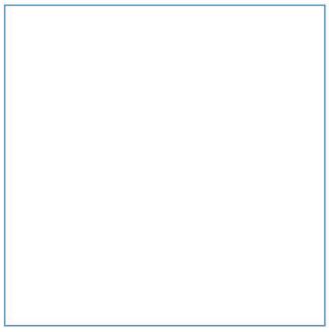
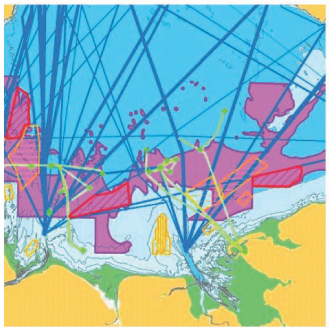
Spatial Data and Evidence Projects

Project 5 – Review of best practice approaches for spatial data management and integration

August 2018




Innovative Thinking - Sustainable Solutions

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Spatial Data and Evidence Projects

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MDB MacCabe Durney Barnes Planning Environment Economics

University of Liverpool

IWDG Consulting

LUC

BirdWatch Ireland protecting birds and biodiversity

MERC Consultants environmental and conservation services

PML Plymouth Marine Laboratory

University of Exeter Medical School

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Summary

ABPmer and its project partners have been appointed by the Marine Institute (MI) to deliver a Spatial Data and Evidence Project to support the development of Ireland's first marine spatial plan. The project is funded through the European Maritime and Fisheries Fund (EMFF). This report relates to Task 5.1 under Project 5, Best Practice on Modelling and Support Tools.

In this task, we have completed an initial review of spatial data management and integration approaches in use across industry and within MSP. During the process, we have developed an understanding of technologies around data and data portals and defined high level stakeholder groups that would be involved in the MSP process. We also conducted a review of seventeen web map data portals, including a mix of existing MSP specific portals and portals serving other objectives, but at a national or international/regional level. The web map portals were evaluated using a standard template to capture different aspects that we considered to be expected, desirable or advanced functionality, and its relevance to MSP.

This has provided us with key information around data, technologies, processes, standards and intended audiences for relevant MSP systems currently in use. We also explored any areas or processes related to this task that MI may wish to develop further.

Aspects of this report will be useful to feed in ongoing tasks, such as the MSP reuse and standards report and the data management planning process in Projects 6 and 7, which are being run by MI internally.

To ensure that MSP datasets are findable and re-usable by all stakeholders, it is key to ensure INSPIRE compliant metadata is provided with a full data description and informative lineage. It may also be useful to consider developing an enhanced metadata standard built on INSPIRE (similar to MEDIN) for Irish needs and include MSP keywords/tags to aid the discoverability of datasets under relevant themes.

MSP data, should be first and foremost discoverable and accessible from Ireland's Open Data Portal: https://data.gov.ie (DATA.GOV.IE, 2018). Use of a simple traffic light system in the search results would highlight any licence restrictions to users at a glance. Promoting the national Open Data Portal will help streamline and focus the user experience ensuring that they can discover all relevant data from one location. The search functionality in the national Open Data Portal would also benefit from a review to consider themes/activities relevant to marine and MSP.

Data providers across all the MSP sectors will need to work to the relevant data and metadata standards for input into the MSP process, to ensure data and reusability and promoting Commons Attribution (CC) data licences by default for data providers. This consistent, open and 'FAIR' approach to data standards embodies the guidance and principles of Ireland's Open Data Strategy and will benefit the MSP lifecycle by maintaining transparency of the data holdings and allowing more complete and effective analyses of interactions between datasets.

The Marine Atlas currently includes many of the best practice functions of MSP web map portals, however, there are some initial improvements that could be made to help engage with stakeholders early in the MSP process, including use of MSP data themes, including rich descriptions/lineage statements, querying of individual features with attribute tables, measure tools and improving the speed of the current Atlas.

Six high-level groups of MSP stakeholders have been identified comprising:

- Statutory Agencies
- Marine Industry/ Business
- Marine Users/ Primary Impact Users
- Coastal Communities/ Secondary Impact Users
- Academia
- Neighbouring jurisdiction

These groups can be further split into internal (statutory agencies and local authority stakeholder groups) and external users for the purpose of the MSP process. Users in each group will have a range of interactions with information relating to MSP, from internal users potentially working from a common internal GIS platform, marine users submitting citizen data, through to developers running conflict analyses to identify potential sites. Access to data for stakeholders will then be determined through a combination of stakeholder group, data licensing and system access credentials where applicable. This experience for users will potentially vary between systems and offer different levels of interaction, from discovering, viewing, analysing online interactively to downloading the data.

Whatever technologies, systems and tools are pursued along the MSP journey, following a defined IT digital service standard for any new systems or code developments undertaken (e.g. on viewers, portals, application programming interfaces (APIs)) will ensure good coding and IT service practices are in place. This will help to ensure that efficiently coded and maintained 'open' first solutions are used during the MSP process, with the potential for loss of technical knowledge minimised through good service management and readiness for future development of technologies to meet future MSP needs.

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1 Introduction

1.1 Background

ABPmer and its project partners have been appointed by the Marine Institute (MI) to deliver Spatial Data and Evidence Projects to support the development of Ireland's first marine spatial plan. The projects are funded through the European Maritime and Fisheries Fund (EMFF).

Marine Spatial Planning (MSP) has been identified as an important process for supporting the sustainable development of Ireland's seas. The development of an overarching national marine spatial plan is identified as a Government policy objective in Ireland's Integrated Marine Plan as set out in Harnessing Our Ocean Wealth (HOOW) (Inter-Departmental Marine Coordination Group, 2012). The Maritime Spatial Planning Directive (2014/89/EU) also requires Member States to develop and implement marine spatial plans covering marine water under their jurisdiction by 2021. Ireland has transposed the Directive through the European Union (Framework for Maritime Spatial Planning) Regulations 2016.

There are five Spatial Data and Evidence Projects supporting the development of the Plan:

1. Data Discovery, Collation and Gap Analysis for Spatial Representation;
2. Data prioritisation and collection for Spatial Representation;
3. Assess and Map Marine Ecosystems Services;
4. Mapping the Potential Impacts of Climate Change; and
5. Best Practice on Modelling and Support Tools for Integrating Marine Spatial Data for Scientific and Technical Advisory Services.

Several of these projects interlink with Projects 6 and 7, which are being run internally at MI and are looking at aspects of data integration and data governance from a MSP perspective.

This report relates to Task 5.1 under Project 5 - Best Practice approaches for spatial data management and integration.

1.2 Task 5.1 Overview

Across the EU there are a range of modelling and decision support tools available for progressing marine spatial planning (MSP), related to data provision, pressures and impacts of human activities etc. This report identifies best practice technical tools in the Irish context.

Project 5 seeks to identify and evaluate best practice models used in, or of relevance to, spatial data management and integration. It will also provide technical advice as to how to add value to the spatially represented data.

In this task, we have completed an initial review of spatial data management and integration approaches in use across industry and within MSP. During the process, we have developed an understanding of technologies around data and data portals and defined high level stakeholder groups that would be involved in the MSP process. This has provided us with key information around data, technologies, processes, standards and intended audiences for relevant MSP systems currently in use.

The review outlines best practice approaches with consideration to both MSP and wider MI requirements. As part of the review, we have also assessed the likely users of a marine spatial planning portal and assessed the ways that individual stakeholders might interact with such a portal.

The report is structured as follows:

Section 2: The Role of Data in Marine Spatial Planning;
Section 3: MSP Stakeholder Engagement;
Section 4: Data Reuse and Standards;
Section 5: Evolving the Marine Atlas;
Section 6: Horizon-scanning; and
Section 7: Conclusions and Recommendations.

Section 3 defines stakeholder groups for MSP purposes which will be useful in aspects of Projects 6 and 7. Aspects of Section 3 and Section 4 interlinks with Project 6, specifically the MSP Reuse and Standards Report deliverable. Whilst the user tools covered in Section 3 and Section 6 feeds into Project 7 and the data management planning process.

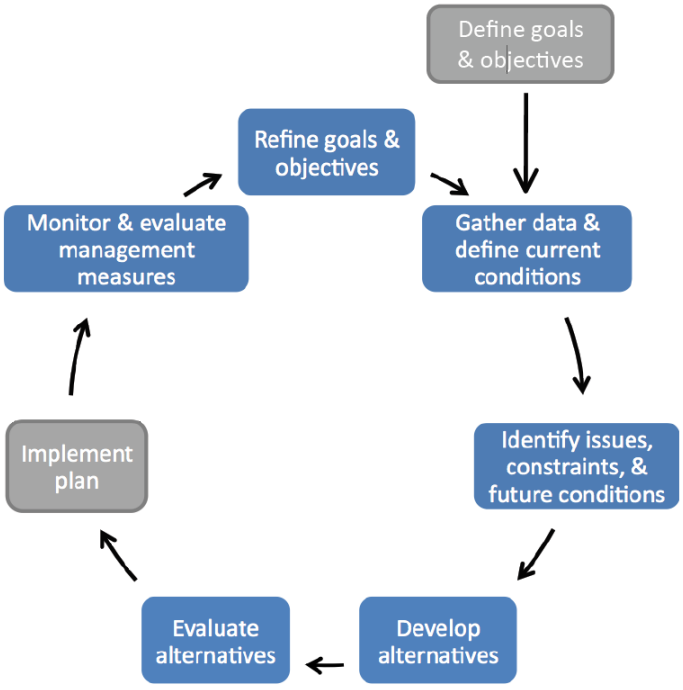
2 The Role of Data in Marine Spatial Planning

2.1 Marine Spatial Planning

Marine spatial planning is "a process by which the relevant Member State's authorities analyse and organise human activities in marine areas to achieve ecological, economic and social objectives". As such marine planning has been established as an integrated and strategic approach to manage the use of Irelands seas in a more sustainable way (DHPLG, 2017).

Marine planning aims to create a framework for decision making that is consistent, evidence-based and secures a sustainable future for the marine area. MSP therefore requires a wide range of data to produce a robust evidence base to support plan development and, as it is an explicitly spatial and temporal process, it requires data at appropriate spatial and temporal resolution.

Marine spatial planning is also an iterative process in that the current status of marine activities are assessed at the start of the program, targets are set using management measures, and then these are monitored for progress. At specified intervals, these objectives will require re-visiting to assess progress and re-evaluate or create new targets. Figure 1 demonstrates the general marine planning process and indicates where data and decision support tools feed in to the planning process.



Source: PacMARA; Center for Ocean Solutions, 2011

Figure 1. Decision guide: Selecting decision support tools for marine spatial planning

Integration of the data sources with tools to allow discovery, access, and the ability to view the data can influence marine spatial planning objectives, it is also important to the transparency of the process and can encourages stakeholder engagement.

2.2 MSP Data Considerations

MSP requires a wide range of evidence to support plan development and, as it is an explicitly spatial and temporal process, it requires data at appropriate spatial and temporal resolution. MSP is also an integrative process and, therefore, also requires environmental, social and economic data including data on all human activities occurring in the marine environment. Information is also required across the Land-Sea Interface, recognising that activities on or near the coast can influence or be influenced by the sea. The open nature of the marine environment also means that transboundary data may also be required.

There is no absolute list of information requirements for MSP but different national MSP processes generally use similar types of information (European Commission, 2016). Information requirements will also be dictated by the level of detail that MSP is seeking to achieve. For example, plans that are seeking to promote more prescriptive spatial policies are likely to require greater levels of evidence to underpin such policies and achieve stakeholder support (MSPP Consortium, 2006).

In order to deliver the maximum benefit and use of data, for the development of Ireland's marine spatial planning process, maintaining an SDI with associated data portal is considered to be the best-practice approach. By maximising the availability and actively preserving the currency of data, the possible influence it has is also maximised, since more opinions and decisions are made using it (Defra, 2013). This can also empower others to deliver plan outcomes by making the right decisions.

3 MSP Stakeholder Engagement

3.1 Defining Marine Spatial Plan Stakeholders

The development of Ireland's Marine Spatial plan needs to consider the stakeholders which will engage with its ongoing development and have an interest in Ireland marine plan area.

Key sectors considered to have an interest in the marine area are (DHPLG, 2017):

- Aquaculture;
- Defence and national security;
- Offshore renewable energy;
- Oil and gas exploration and production;
- Fisheries;
- Local coastal communities and elected members;
- Local authorities;
- Planner and marine licensees;
- Marine aggregates;
- Environmental organisations, including marine conservation;
- Cultural heritage;
- Marine dredging and disposal;
- Ports and shipping;
- Telecommunications and cabling;
- Tourism and recreation;
- Scientific research and academics; and
- Waste water treatment and disposal.

This is not an exhaustive list and will likely expand as the plan develops but it highlights key groups which will need to be consulted through the process and are likely to be end users of Ireland's national marine plan.

By considering the sectors which are likely to have an interest in the development of a marine spatial plan it's possible to identify the pathways which these sectors might use to interact with the Marine Spatial Plan and any developed portal.

Certain groups and organisation which represent the interests of the sectors above are discussed in Table 1.

Six main groups are considered to play a role in the marine planning process, these groups are determined by their likely use of the Marine Planning Portal.

Table 1. Stakeholder groups, roles and uses of Ireland's Marine Planning Portal

User Group	Likely Role/ Use	Role/Use of Data/Tools
Statutory Agencies	Government partners, policy makers, regulators and Local Authorities	As public authorities, this group will need to make, or provide input into, planning and licensing decisions. Within this group there may be different levels of access e.g. DHPLG may have unique access to some sensitive information relating to marine licensing. Decision makers will need to make decisions in terms of issuing licences/consents in accordance with the MSP,
Marine Industry/ Business	Fisheries, Aquaculture, Seaweed harvesting, Aggregates, Renewable energy, Ship yards, Shipping and Freight services.	This group includes maritime industry and businesses whose activities supply and service the maritime sector. The industry includes all enterprises engaged in the business of designing, acquiring, manufacturing, constructing, operating, repairing and supplying the sector. These enterprises will be those who submit applications to Statutory Agencies under policies that the Marine Spatial Plan will encompass.
Marine Users/ Primary Impact Users	Tourism: Wildlife watching, scenic boat cruising, underwater archaeology. Recreation: Water sports, diving and snorkelling.	This User Group refers to coastal land-based tourism activities such as swimming, surfing and other coastal recreation activities, while also including sea-based activities such as boating, cruising, yachting, nautical sports along with their land-based services and infrastructures. This group are directly impacted by the Marine Industry/Business User group as their activities can be directly affected by the submission of applications in the Industry User group.
Coastal Communities/ Secondary Impact Users	Public, general users	Coastal communities are people living on, or near, the coast. This group are likely to use the portal to view data to comment on marine plan policies or marine licence applications or for more general interest. They are unlikely to use the data for specific analysis or application. This group are also impacted by the Marine Industry and Business sector however, this is in an indirect manner such as living in close proximity to marine infrastructure.
Academia	Scientists, other researchers	Similar level of use to marine users in terms of how they will analyse/ utilize the data e.g. explore and analyse data not just view. However, depending on their research, they could be allowed less restricted access to the portal.
Neighbouring jurisdiction	Regulatory bodies Northern Ireland, England and Wales.	These organizations are likely to use and download the data to view neighbouring resource areas however data is unlikely to determine their resource use as this will be determined within their own resource area.

3.2 User Pathways

One of the objectives of MSP is to provide more certainty concerting where different activities may occur thereby speeding up licensing processes. Marine users should also feel more confident that decisions made on applications for projects will be robust in the face of challenge, provided they are made in accordance with the policy framework set out in the marine plan. To ensure that these goals are met this section aims to understand and define individual user pathways and data interactions. Four example pathways are described below.

3.2.1 Marine Planners

One of the key uses of a marine spatial plan is as a decision-making tool for regulatory authorities and policy makers, including forming a key input to the development of future sectoral policies. Figure 2 below illustrates the potential pathway and process by which a stakeholder may use the marine spatial plan in their role in marine planning.

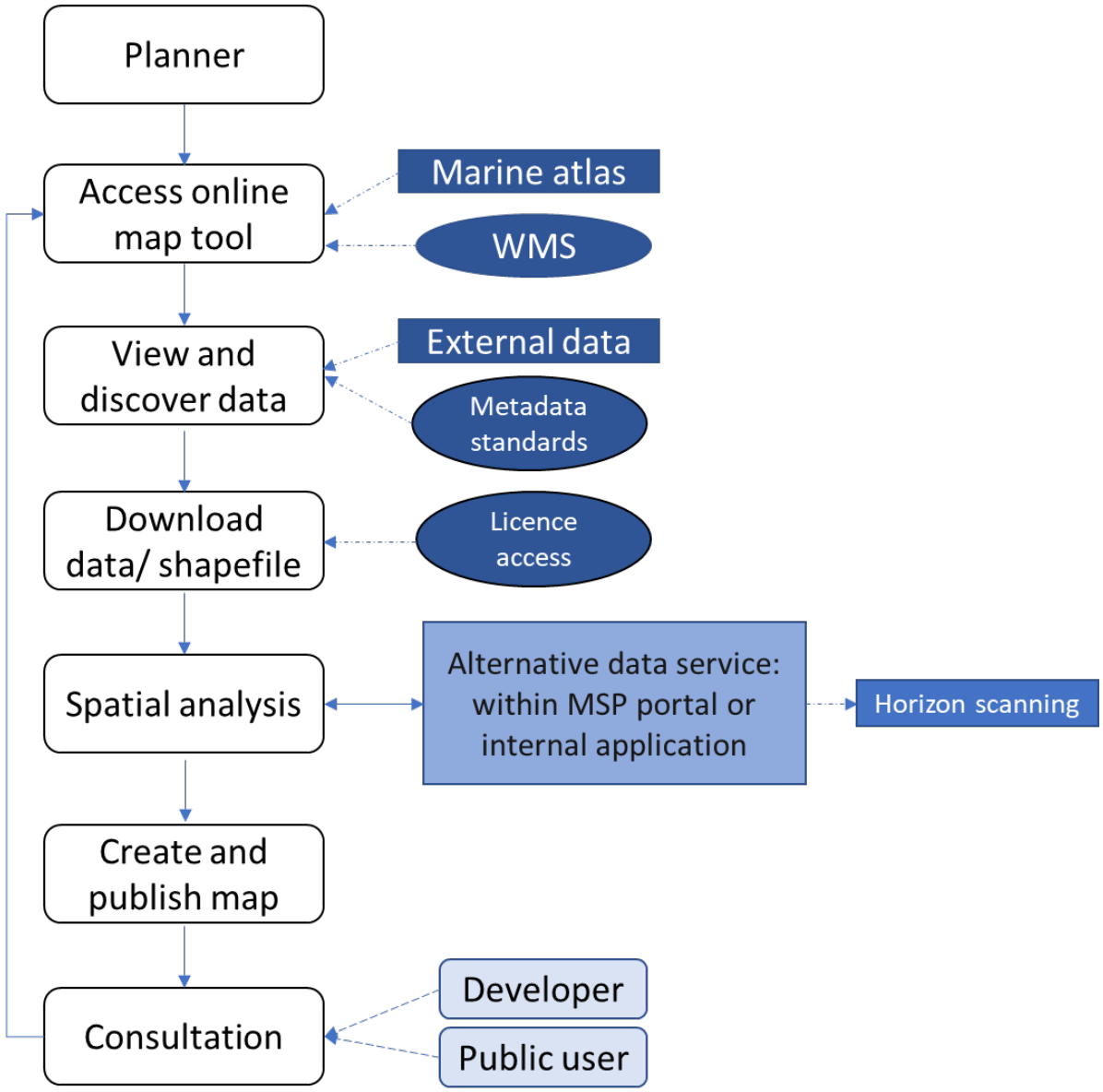


Figure 2. Marine planner user pathway

For example, marine planners may wish to identify areas for future development of offshore wind within Irish waters. Any expansion of offshore wind energy generation requires the application of marine spatial planning to identify areas that may be suitable for the development of offshore wind projects. A first stage in marine planning must be the identification of initial Areas of Search based upon scientific study and available data from the spatial planning portal or Ireland's marine Atlas. This analysis will likely bring together multiple geospatial data layers, which depict both opportunity (such as average wind speed or existing grid connections) and constraint (such as fishing activity, shipping traffic or environmental sensitivities). These will be compiled into spatial analysis software where they can be combined and presented as one national map.

The resulting output from these processes produces a map of broad areas of potential opportunity where there are acceptable resources with low levels of constraint. These initial Areas of Search might then be subject to a process of consultation and further assessment through SEA, AA and possibly socio-economic assessment. Once adopted these areas will outline the spatial footprint within which any future offshore wind development should take place.

Currently spatial analysis is likely to be undertaken in a desktop application as opposed to a web application. Data will be downloaded from the web portal and manipulated and mapped in a desktop programme, however there is potential to develop a web application to support this function in the future, which will enable aspects of the planning process to be conducted in one portal. Some discussions around horizon scanning and future portal options are discussed in Section 6.

Other considerations as part of the user pathway is how data is viewed and discovered. There is potential to have 'pre-filled themes of data' e.g. layers appropriate for aquaculture or marine renewable planning, which allow quick and easy bundle download of key datasets. However, it is important to have the option to search and download additional data not in these pre-filled bundles. Another key consideration regarding data download is that metadata should always be downloaded in conjunction with data.

3.2.2 Marine Licensors

Another key use of a marine spatial plan is as a decision-making tool for marine licensors by aiding decisions on individual consent applications. Figure 3 illustrates the potential pathway and process by which a stakeholder may use the marine spatial plan in their role in marine licencing. The pathway highlights the route which might follow the submission of a licence application.

For example, a developer has submitted an application for a finfish aquaculture facility. The Licensor, DHPLG, would access the online web mapping platform to view data within the area of the licence application. They may plot the proposed licence area in the application and view it against other resources e.g. wave energy, cables, shipping lanes, marine mammal distribution, to assess if any conflicts arise with the licence proposal. They may download data and shapefiles to produce a map of the licence proposal and review this along with any EIA scoping reports, environmental appraisals, or data provided by the developer as part of the licence application, to feed in to the licencing decision. These tools could be used to assess any conflicts in development and use the results to inform the licence decision.

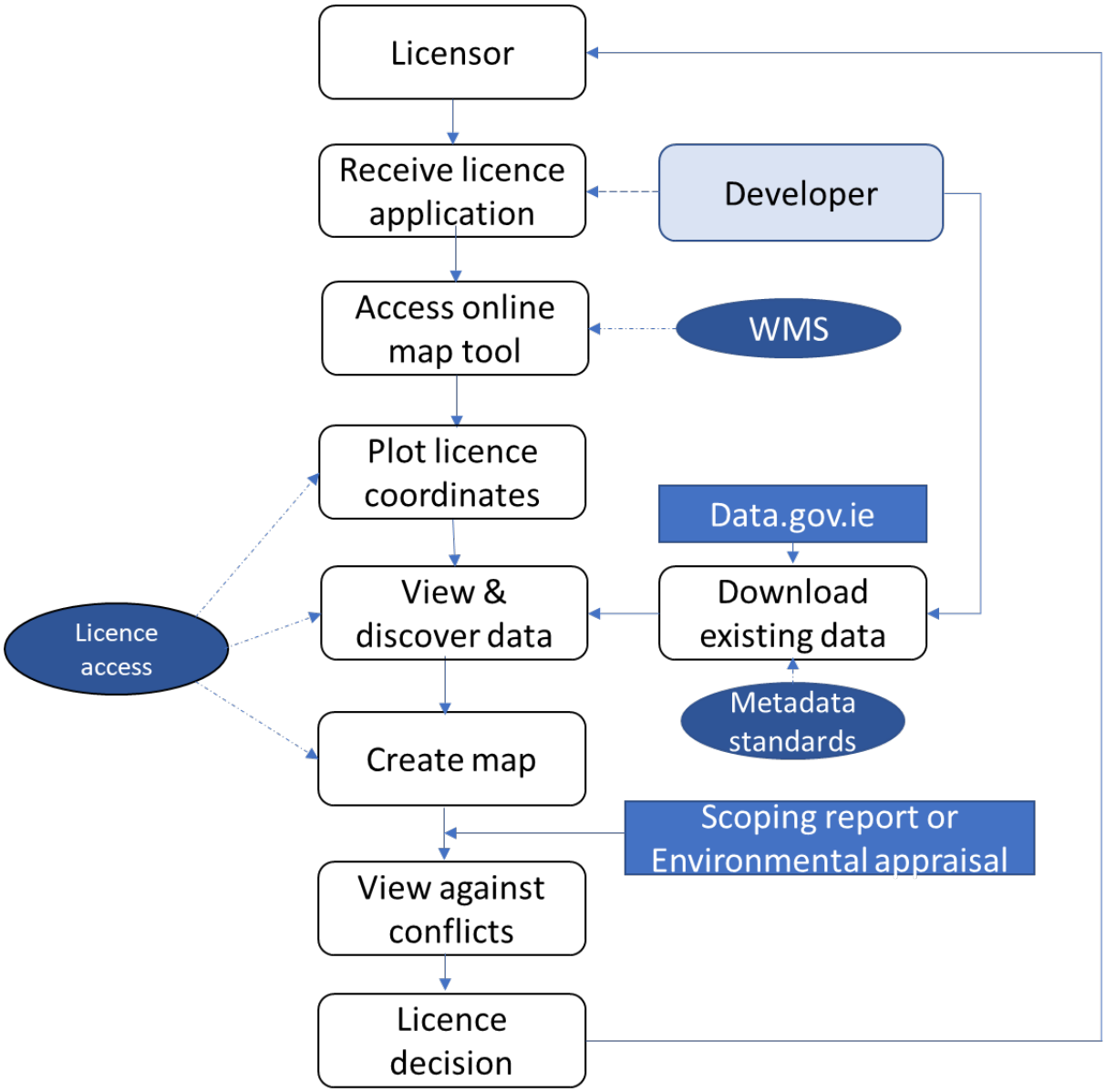


Figure 3. Licensor user pathway

3.2.3 Developers

Developers, for example, a port company may want to access shipping channel maps, detailed seabed maps (Inc. bed type, typography etc.), and locations of cable and other infrastructure in order to assess the feasibility of undertaking a capital dredging project. This data may then influence their decision to submit a licence application and be used to assess if there are any conflicts in their proposed development area. Developers are therefore asking a different question of the data compared to planners and licensers. They are trying to discover what is already in an area as opposed to what could be planned for an area, their use is not necessarily MSP related. An example user pathway is shown in Figure 4.

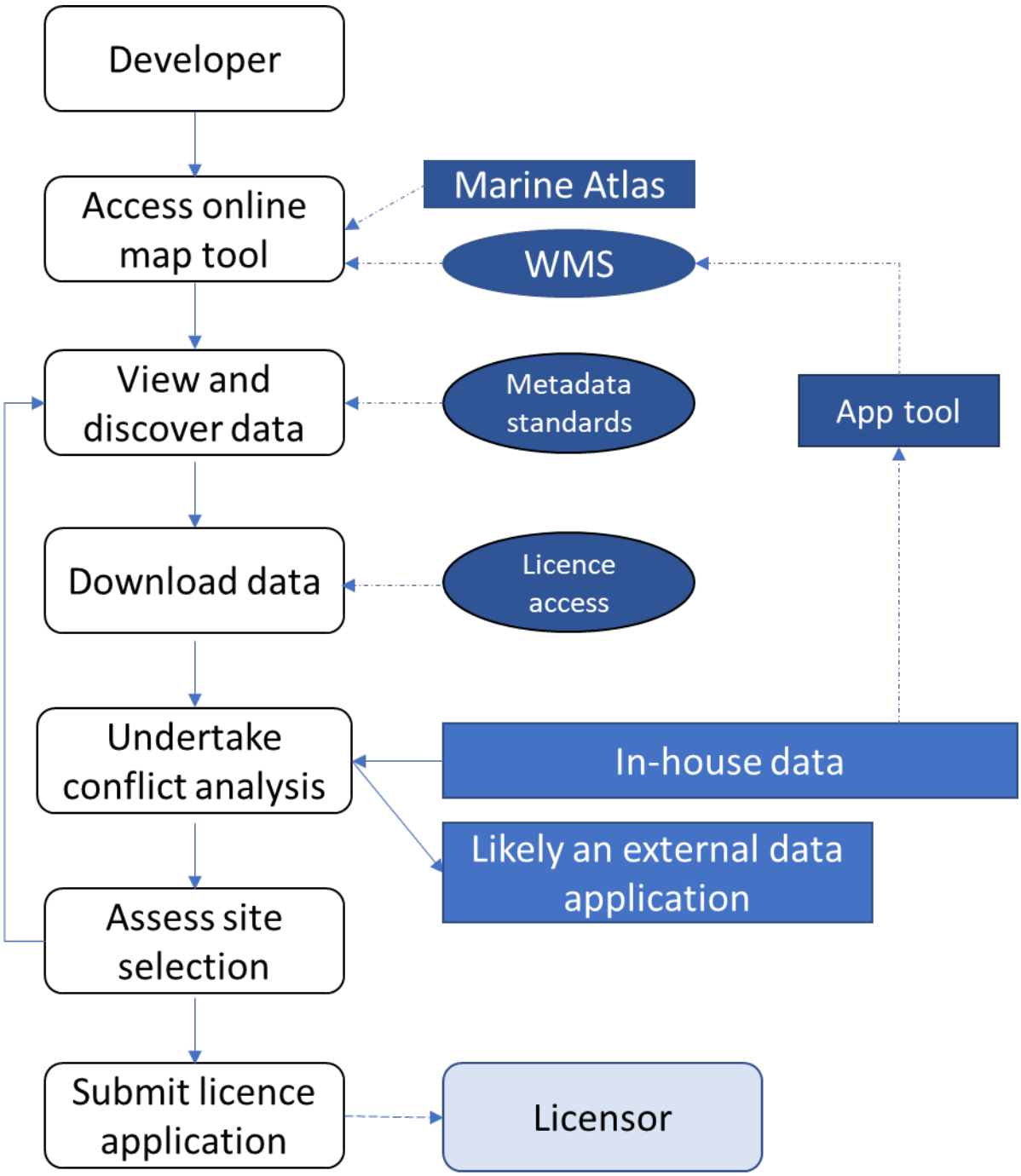


Figure 4. Developer user pathway

The route developers take to Ireland marine portal may differ depending on their method of searching for data. They may first discover data within Data.gov.ie and then enter the Marine Atlas to view and map the data, or they may view data on the Marine Atlas and then download the appropriate layers from Data.gov.ie. Whichever pathway to entry is used it will not ultimately affect the end use of the data. Developers are likely to mainly view data using the online portal, they may download some data if it is publicly available and conduct analysis in an external application. If they have their own data they are likely to feed this into the process. An additional function of the web portal may therefore be to encourage stakeholders to actively provide data. This could be through an external data upload app or tool.

3.2.4 Public/ General Users

Public and general users are likely to use Ireland's marine plan and planning portal for environmental interest to potentially view locations of important habitats or species e.g. maerl, and to promote better protection for such features. An additional example may include viewing the location of sensitive habitat e.g. reef or marine mammal distribution in relation to a proposed government plan so they can discuss any concerns with a local MP/ authority. An MSP web portal allows the wider public to view the supporting information that helped inform the process and to justify decisions made (Figure 5). There is potential to have a feedback pathway within the Marine Atlas for public users to feed in to the consultation process.

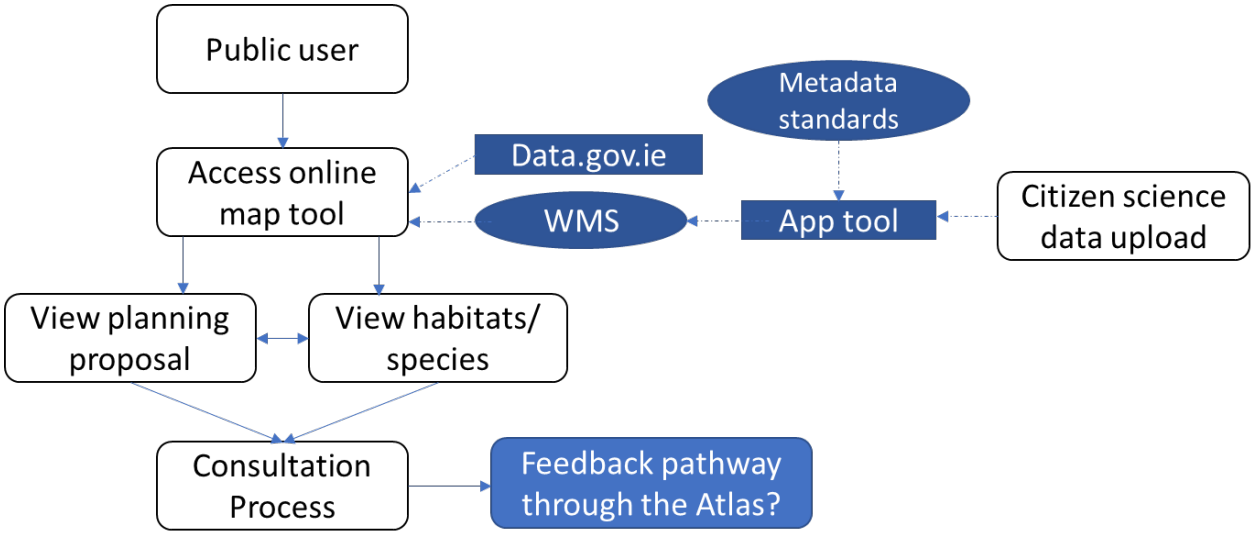


Figure 5. Public/ general user pathway

Prior to a public user accessing the Marine Atlas, MI need to consider how the public user might gain access, 'pre-entry'. Many public users are unlikely to initially know of the portal's existence. When looking to consult on a planning proposal or search for species information they are likely to consult either the council or statutory agencies website e.g. NPWS. Having an access link with background information about MSP on council or appropriate government websites may help pre-entry to the Marine Atlas.

As discussed above, another function of a web portal could also be to encourage members of the public to actively provide data e.g. through citizen science, offering the opportunity to upload datasets as long as certain data requirements, such as standardised metadata, are met (European Commission, 2016).

3.3 User Permissions

Security and licencing will determine which data is available to which stakeholder groups and how they are able to use and access the data. This section discusses some of the potential options and considerations for security and data licence permissions.

3.3.1 Security

Stakeholder groups can be roughly separated into 'internal' and 'external' user groups. Internal users will include statutory agencies and local authority stakeholder groups, therefore only involving internal MSP practitioners. They will have internal, additional, access to privately owned or sensitive data which will not be available to wider stakeholder groups. These may include data such as licence applications.

External groups will include marine users and industry, coastal communities/ public users, academics and organisations from neighbouring jurisdictions. These groups will have access to only certain amounts of data and will therefore be excluded from sensitive information sources of data which have restrictive licences (see Section 3.3.2 below)

One way to implement these different security levels may be thorough an online web map or atlas which is publicly available and therefore accessible for 'external' users, and then have an internal data store which only MI and DHPLG have access to. Sensitive layers will therefore only be accessible within the internal data store. If there are then certain data layers e.g. licence applications that only DHPLG can view, then these layers could have internal access restrictions added.

3.3.2 Licencing

Licencing will be determined by the data owner and therefore will not always be fully in MI's control. The data licence will determine how stakeholders can interact with the data, ranging from limited to internal users only, viewable only, or viewable and downloadable by internal and external stakeholders. Some data licences could also require users to acknowledge acceptance of terms of use either to view or download. The nuances across different types of data licence imposed by data providers could therefore affect aspects of the user journeys discussed above.

Where possible MI should attempt to seek a Creative Commons Attribution (CC) data licence from the provider. This is important to prevent data restrictions and therefore benefit the MSP process by maintaining transparency and allowing easier analyses of interactions between datasets. This will allow the maximum number of stakeholder groups to view and access data sources.

The Irish Government has already recognised the importance of an Open Data initiative by citing this kind of licence as the solution to overcoming any barriers to the sharing of data in the 2016 Report on the Irish Implementation of the INSPIRE Directive.

> *"As part of the Open Data initiative, the open licence format adopted by the Irish Government is the Creative Commons Attribution (CC) licence which allows for maximum dissemination and use of licensed materials"*
>
> DHPLG, 2017

Table 2 gives an indication of some possible types of licences and their associated access restrictions. This list in reality will be more complex, for example, accounting for scenarios such as contractors working on Government funded MSP projects.

Table 2. Possible licence types and access availability

Licence Type	External Stakeholders			Internal Stakeholders
	Discover Online	View Online	Can Download	Discover, View Online and Download
Open licence	Yes	Yes	Yes	Yes
Government licence	Maybe	No	No	Yes
Commercial licence	Yes	Yes	No	Yes
Research licence	Yes	Yes	Maybe	Yes

Relevant data where possible should be discovered to both internal and external stakeholder through relevant channels. Where applicable for publicly available data users are supplied with links to view or download data along with associated metadata information, including aspects such as relevance and suitability for MSP, any usage restrictions and openness rating. For commercially owned data the results should direct users to towards the data owner so that users can contact owners to individually ask permission. Signposting data, irrespective of licence type, as a minimum helps ensure that stakeholders are aware of all relevant datasets, without implying perceived knowledge gaps where actually data does exist.

3.4 User Tools

Integration of the data sources with tools to allow discovery, access, and the ability to view the data that has influenced marine spatial planning objectives, is important to the transparency of the process and encourages stakeholder engagement.

An MSP web portal allows the wider public to view the supporting information that helped inform the process and to justify decisions made. Another function of a web portal is to encourage stakeholders to actively provide data, offering the opportunity to upload datasets as long as certain data requirements, such as standardised metadata, are met (European Commission, 2016).

Following an evaluation of data and knowledge gaps to implement MSP, conducted on behalf of the Directorate-General for Maritime Affairs and Fisheries (DG MARE) in 2016 (European Commission, 2016), it was found that, although many European projects were short-lived (1 to 3 years), they did prove to be useful mechanisms for developing stakeholder ownership and channelling important policy issues through appropriate authorities. Some of the projects included the development of online mapping tools and those that continued beyond the lifetime of the project had a clear link to an underlying policy initiative or were managed by a public body with an interest in a longer-term MSP data strategy (European Commission, 2016).

The following quote from this study illustrates the importance of long term data initiatives, which not only provide access to data, but also have a role to play as data stewards:

> *"Very few of the projects developed data portals, and for those that did, the portals did not survive beyond the end of the project, underlining the limited value in developing a data portal in the project context in the absence of a long-term data strategy."*
>
> European Commission, 2016

The ability to interact and understand data both in by itself and in context with other datasets will be a continuing theme throughout MSP. The methods of data interaction by the stakeholder groups will evolve during the process. Many tools can be considered to some degree as Decision Support Tools (DSTs) and both add value to interrogating the data related to the MSP process and aid in the monitoring of MSP goals and objectives. Figure 6 sets out how different types of tools can assist with the varying stages of MSP (PacMARA; Center for Ocean Solutions, 2011).

The visualisation of geospatial data can be achieved through various mediums including digital or hardcopy maps, desktop and web based applications. The choice of solution will depend on the objective at hand. For example, printing out hardcopy maps from desktop GIS templates works well in the context of local stakeholder meetings. Whilst specialist workshops might benefit more from using an interactive WebGIS application displayed on a large screen.

	PROCESS STEP					
	Gather data and define current conditions	Identify issues, constraints, and future conditions	Develop alternatives	Evaluate alternatives	Monitor and evaluate management measures	Refine goals and objectives
TOOL FUNCTION						
Data management	✓					
Mapping and Visualization	✓	✓	✓	✓	✓	✓
Alternative scenario development and analysis		✓	✓	✓		
Management measure option proposal			✓	✓		
Stakeholder participation and collaboration, and community outreach and engagement	✓	✓	✓	✓	✓	✓
Adaptive management and assessment of achieving objectives				✓	✓	✓

Source: PacMARA; Center for Ocean Solutions, 2011

Figure 6. Decision guide: Selecting decision support tools for marine spatial planning

WebGIS applications come in various flavours powered by open source and proprietary technologies and the data can be communicated in different ways depending on the solution adopted. For example, using Esri's story map applications can be effective in combining narrative text with GIS maps and other multimedia content to engage with stakeholders. Whilst online mapping technologies offer out of the box or mash-up options to create standard WebGIS applications. The additional advantage of adopting mapping JavaScript technologies such as OpenLayers and Leaflet, is the ability to customise the end-user product by adding tools and functionality as required during the MSP lifecycle.

Data is often more complex and not easily presentable in a standard mapping format. More linear tabular data can be presented through HTML tables and further enhanced using interactive JavaScript libraries such as Tabulator. For data that requires more complex filtering and user interaction on the web then presentation tier technologies such as Shiny or BokehJS underpinned by R or Python programming code could be the way forward.

Desktop solutions can be used for both authoring and maintaining data and using more complex analytical techniques to interrogate data. This can range from typical GIS tasks such as generating new MSP datasets through to developers combining MSP, wider marine and in-house datasets to investigate suitability of potential sites for a particular activity. Data can also be analysed or manipulated in desktop software such as R, MATLAB or Excel.

Other longer term uses of data later in the MSP process could include use of tools such as Marxan and other DSTs. One of the biggest advantages of DSTs is the ability to process complex information from a variety of sources and highlight the interactions between the datasets with the aim of identifying trends that will assist in tasks such as the planning of marine conservation areas.

Other web technologies such as Jupyter notebooks (or JupyterLab) has the advantage of combining, code, visualisations and supportive text, which could be useful for enabling stakeholders to interact with data that has an accompanying MSP narrative or providing repeatable data processing workflows as another form of DSTs.

4 Data Reuse and Standards

4.1 Rules and standards

Spatial data can be massive in both its volume and complexity and have large numbers of disparate external data sources. Data governance is, therefore, very important for overseeing the integrity, use, availability and security of all data owned or controlled by an organisation. The full life-cycle of data management of spatial data includes collection from field and public domain sources, quality assessment and control, storage in standardized data models, distribution to viewer and/or analysis applications and capture in knowledge management and audit systems (WEC, 2010).

Data management standards are widely used within data collection and management with the aim of facilitating data maintenance, discovery and re-use. The availability of reliable data is key to any decision-making process; this can be achieved through standardisation and processes that define a set of common interfaces that aim to preserve an authoritative version of the data whilst enabling effective interoperability. These can include specifications that encompass data collection, the discovery and provision of web based services to promote the sharing of and access to data.

The use of metadata should have sufficient information to allow users to have confidence in the data when deciding whether to use it to inform decisions. Requirements include defining ownership, accuracy and precision of the data and including sufficient information on the lineage of the dataset to track how the data has been collected and subsequently manipulated to understand any limitations. A detailed description is also important so that the user has a thorough understanding of the information that the dataset is presenting before deciding whether it is appropriate for the intended use. There are metadata standards that have been designed to standardise metadata across industries, tailored to specific data types.

Marine spatial planning could benefit from adopting one of the common standards to ensure that data available for decision making is of a consistently high quality and easily accessible.

A possible improvement on metadata standards could be to develop extensions, such as controlled vocabularies for keyword tagging, to include information relating specifically to marine spatial planning. For example, MEDIN improved upon GEMINI and INSPIRE principles to make metadata requirements more specific to particular survey types in the marine environment. Some quality assurance steps, specifically in relation to how the dataset is of relevance in an MSP context, combined with a custom MSP controlled vocabulary could be included and appended to a metadata standard such as INSPIRE, already in use by MI.

Before MSP datasets are made available online they will need to have undergone a review process to capture elements such as the MSP and openness ratings and that all licensing and EU General Data Protection Regulation (GDPR) pre-check criteria have been addressed. These steps can be factored into work flows within the data management process and will define how and which stakeholder groups will be able to interact with the data during the MSP lifecycle. Consideration should be to the components of the data itself, for example dates and times consistently using a format like ISO 8601 and characters encoded in a universally supported format such as the Unicode Transformation Format (UTF-8) standard.

Making spatial data available online is an established process through adopting technologies such as REST, WMS, WFS and WCS. These technologies are governed by standards such as the Open Geospatial Consortium (OGC) and the World Wide Web Consortium (W3C). Using recognised OGC formats such as WMS, WFS and WFS ensure that services are open and readily consumed by different

platforms. It is acknowledged that some proprietary platforms such as Esri ArcGIS Enterprise are designed to provide powerful end-to-end enhanced data visualisation and analytical capabilities in their web products, though at a cost both financially and in terms of integration with non-Esri end-user applications. Accessibility should also be part of end-user design where possible, following standards such as the W3C Web Content Accessibility Guidelines (WCAG).

Once data is made available online, it needs to be easily found by the MSP community. Adopting the approach of persistent data Uniform Resource Identifiers (URI) on the web, combined with use of Schema.org mark-up through use of standard annotation languages such as JSON-LD or Microdata can facilitate better discovery of the data. Publishing data in this way enables search engines to crawl the embedded tags and enable users to obtain more refined results, including data location and expediating the discovery of related information.

Controlling access to online MSP data to view and/or download could be a conditional licensing requirement imposed by the data provider or a desire to deliver specific MSP user channels (internal vs external) on a common platform. This can be meet by implementing an authentication tier at the data and/or the application level. Adopting recognised authentication standards such as Open authorisation framework (OAuth2) or JSON Web Tokens will ensure better future proofing from a support perspective and offer options to migrate/re-use an established MSP user base to authenticate future web applications.

Any web traffic that contains authenticated content should be secured between client and server using encrypted web protocols such as Hypertext Transfer Protocol (HTTP) secure (HTTPS). It is noted that encrypting web traffic will result in more complex deployments and introduce the risk of performance impact on traffic due to the extra encryption layer. Consideration should also be made to the risk and impact of man-in-the-middle attacks, especially with the more sensitive datasets.

5 Evolving the Marine Atlas

5.1 Data Portal Review

A range of data portals were reviewed as part of this project to identify trends or strengths of existing portals, focusing on those portals containing web map applications. These were made up of a mix of existing MSP specific portals and portals serving other objectives, but at a national or international/regional level.

The portals reviewed are listed below. The review method and full results from each portal can be seen in Appendix A.

- Compendium for Coast and Sea (Marine Institute, Flanders).
- Digital Ocean
- EPA Maps (Environmental Protection Agency, Ireland).
- GeoHive (Ordnance Survey Ireland).
- HELCOM (Baltic Sea Region).
- Heritage Maps (The Heritage Council, Ireland).
- INFOMAR.
- IPAS (Integrated Petroleum Affairs System).
- Ireland's Marine Atlas (https://atlas.marine.ie).
- MAP-MEP (Interactive energy map of the North Sea).
- MMO (Marine Management Organisation, UK).
- Marine Plan (Spain).
- NMPi (Marine Scotland).
- National Maps and Wildlife Services (Ireland).
- Northeast Ocean Data.
- Wadden Sea Region Planning Tool.
- Wales Marine Planning Portal.

The review found that a high percentage (>80%) of features/functions, which would be expected of a spatial data viewing portal, and around 50% of the ones which would be desirable, were included within all the portals reviewed.

Some of the key features which were 'expected' from an MSP portal included user-friendly, easy to understand data portal, large viewable map with a simplistic layout, clear scale and zoom/ pan features, and easily found data sources with appropriate metadata.

For the data portals which were designed as marine spatial planning tools, the average percentage of features/functions included which were given the highest priority for MSP (rated 4) was 84%, compared with the MI Atlas which was 90%. The percentage of features/functions included in the data portals which were considered of higher priority (rated 3 or 4) was 60% for the MSP data portals, compared with the MI Atlas which was 64%. Therefore, the existing Atlas compares favourably with many other MSP data portals.

5.2 Good Practices/Functions Identified for an MSP Data Portal

Good functions that were identified during the data portal review were:

- User-friendly;
- Fast loading and refresh performance;
- Rich data;
- Themed datasets;
- Dataset information 'pop-ups', including images/reports;
- One-look licensing flag, for example the red/green light system (used in MEDIN's data portal);
- Devolved download functionality to a catalogue site;
- Keyword search;
- Spatial query of data via user drawn polygon;
- View attribute table;
- Link to standard compliant metadata, with full data description and lineage information;
- Order layers;
- Layer transparency;
- Moveable/minimise legend;
- Choice of base maps; and
- User guide.

When designing the MSP data portal, it is important to consider which pre-existing API technologies may be utilised to underpin some of the functions to be included. There are several web mapping APIs available, but most serve different types of usage, so it is important to review and select the most suitable. This will allow usage of pre-existing code to create efficiencies when coding a new data portal and will also benefit from the ability to make use of updates with new functionality, and an active community base to draw ideas from.

An important practice when collating datasets to hold on an MSP data portal, is to seek a Creative Commons Attribution (CC) data licence from the provider, as discussed in Section 3.3 above. This is important to being able use the data without restriction and will benefit the process by maintaining transparency of the MSP process. The Irish Government has already recognised the importance of an Open Data initiative by citing this kind of licence as the solution to overcoming any barriers to the sharing of data in the 2016 Report on the Irish Implementation of the INSPIRE Directive.

> *"As part of the Open Data initiative, the open licence format adopted by the Irish Government is the Creative Commons Attribution (CC) licence which allows for maximum dissemination and use of licensed materials"*
>
> DHPLG, 2017

5.3 Taking the Marine Atlas Forward

The Marine Atlas currently includes many of the best practice functions (including basic functionality such as legend, zoom tools, etc.) as shown in the completed data portal questionnaire in Appendix A. It also scores highly for functions that are particularly relevant to MSP.

Useful existing additional features include:

- Link to source metadata.
- Free text search for data and suggestions for zoom to bay locations.
- View only active layers in separate table of contents.
- switch all active layers on/off.
- Summary information on querying feature.
- Bookmark.
- Feedback/contact.
- Help section.
- Choice of base maps.

5.3.1 Possible Improvements

Possible improvements to the data portal, from a MSP perspective, include:

- Loading and refreshing speed needs to be as fast as possible so that stakeholders with poorer broadband access will still be encouraged to engage with the process.
- Themes need revising to be more relevant to MSP with subcategories to help stakeholders locate datasets of interest, including recreational and socio-economic activities.
- Querying of individual features i.e. identify tool shows details at the individual record level, rather than just at the dataset level.
- Measure tool.
- View attribute table.
- Improvements to the datasets to ensure they all comply with INSPIRE data standards.
- Improvements to the source metadata to ensure they are not only INSPIRE compliant, but also provide useful descriptions and lineage information about each dataset.
- Build in a tool to check metadata compliance (which would also be useful if stakeholders are able to upload new datasets) – the online INSPIRE metadata validator can be accessed via https://inspire-reference.jrc.ec.europa.eu/tools/inspire-validator.
- One-look licensing or openness rating flag, as seen in MEDIN, would be useful to highlight which datasets can be downloaded free of charge and which ones need a data licence agreement with the data owner.
- Facility for stakeholders to provide data to the portal.
- The addition of Decision Support Tools (DSTs).

6 Horizon-scanning

Previous sections have alluded to the variety of technologies and approaches that would enable MSP stakeholders to get best use of MSP related data. Over the life of the MSP process stakeholder requirements will change, and these needs can probably be meet by existing functionality that has already been used in the MSP community. Such functionality could range from the use of online functionality to allow users to comment on options during a consultation process, the ability to create planning zones interactively through to the ability to submit citizen information about recreational activities online.

As the web and the way people interact with it is evolving at a rapid rate, the functionality of today is already evolving in design to be mobile first, and subsequently could yet see a wider adoption of native mobile apps for engaging with stakeholders. An obvious application would be around collecting related citizen data to generate new activity layers to feed into the MSP process. Another could be as a communication tool to alert users of upcoming events and provide news updates during the MSP process. To that end it is noted that any web products moving forward should also be responsive in design.

To discover what MSP data and tools exist, users will need to be guided and this experience could vary between internal and external stakeholder groups. External users will need to easily find the online MSP space and be provided contextual narrative and signposting to relevant tools supporting their involvement along the MSP journey. The narratives could also be delivered as interactive web applications such as Esri's story maps aiming to bring the ability to tell a story whilst allowing stakeholders to interact with the data. In time, other supporting MSP information such as case studies could be incorporated into the user experience.

Internal stakeholders may have access to a separate GIS platform that is integrated with a core data repository. The platform could span multiple departments where users have access to either web or desktop based GIS tools, depending on their function, and data access also profiled by function. For example, planners may not have access to data related to ongoing licensing applications. This approach would ensure that duplicate and outdated datasets would be replaced by a single central authoritative version of the data for all GIS desktop or web users. Another possibility could be to explore options to expand the existing web platform to handle both internal and external users. This route could require significant restructuring of the architecture both in scalability and implementation of extra authentication measures. Other considerations would include the day to day environment and tools that functions such as planning or licensing could be using. For example, Natural Resources Wales are bolting their marine licensing function onto a central SharePoint environment, could this be complemented by integrating mapping into task specific workflows, potentially with outputs captured against the relevant job?

To ensure that MSP datasets are findable and re-usable by stakeholders, it will be beneficial to ensure INSPIRE compliant metadata is provided with a full data description and informative lineage. It may also be useful to consider building upon a metadata standard such as INSPIRE, using controlled vocabularies to meet Irish needs and include MSP keywords/tags to aid the discoverability and rating of datasets under relevant themes. The themes for MSP should also include subcategories to help stakeholders locate datasets of interest, including recreational and socio-economic activities, which are not all currently covered by the Marine Atlas. It is worth considering the option to investigate the use of a similar controlled vocabulary and potentially establish a new schema related to marine and MSP datasets under Schema.org.

The user experience for stakeholders when using an MSP portal needs to be as intuitive as possible. Considering concepts such as using pre-bundled maps or themes of data, possibly by activity, tied in with a simple layer search interface presented as a single layer management tool fronting the portal makes it both easy for the user to find relevant layers and enables efficient management of the layer list in the underlying application. Likewise improving the workflow around stakeholders downloading information could allow users to pick multiple datasets and then have access to bundled data downloads. The download bundles could be grouped by licence type, allowing tracking of user acceptance of any licensing agreements as required.

Looking forwards it is possible to conceive an opportunity to allow stakeholders, such as developers, the ability to upload related datasets via a web interface as a form of contribution back to science. As a marine licensing process is established there are opportunities to both provide a web platform that could offer enhanced functionality to internal and external stakeholders. For example, the creation of a built-in pre-screening tool for potential applications and the ability to effectively catalogue incoming licence related datasets to promote better data discovery and re-usability internally for improving scientific understanding of the marine environment.

Other online tools in the future could include greater use around analytical presentation of data through mediums such as Shiny apps or other web-enable libraries. The use of web technologies such as Jupyter to standardise and simplify access to internal, and potentially external, data work flows offers great potential to unlock and harness big data for MSP purposes whilst enabling reproducible and transparent workflows.

Jupyter notebooks (JupyterLab) could going forward power the next generation of DST with the potential to utilise machine learning techniques and run more complex analyses based on the latest data available either internally or even from further afield in the semantic web.

These concepts are not exhaustive and the adoption of technologies moves at such a pace that requires a watching brief to flag other technical or functional opportunities that would benefit the MSP process in the future.

7 Conclusions and Recommendations

This review shows that effective adoption of spatial data at all levels depends on the quality of the data and the value of that data to the end user. Technologies should be seen to deliver benefit and value to the MSP process and the decisions made from mapping spatial data need inputs of the highest accuracy and completeness (WEC, 2010).

It is recognised that MI already has an established data management system in place with the majority of data contained in the ISDE having associated INSPIRE compliant metadata. However, on occasions there have been discrepancies between datasets which combined with aspects of the metadata lacking detail, such as lineage and description, impact on users' confidence re-using the data for other purposes.

The majority of existing spatial data are also discoverable and viewable via ISDE and the Marine Atlas web map portal, which also provides a data download function. It is acknowledged that the download function could be evolved to better meet stakeholder needs, taking into consideration the location of the download capability and/or in time the provision of a unified download workflow.

As already highlighted, MSP datasets must be discoverable and where possible re-usable by all stakeholders. Data providers across all the MSP sectors will need to work to the relevant data and metadata standards for input into the MSP process, to ensure data and reusability. It is recommended that consistent, open and 'FAIR' data standards are adhered to by all data providers, to allow effective discovery, comparison and more reliable downstream analytical processes. This approach embodies the guidance and principles of Ireland's Open Data Strategy (Irish Government, 2017).

An important aspect when collating datasets to display on an MSP data portal, will be to agree Creative Commons Attribution (CC) data licences where possible. We recommend that CC data licences are established by default for all data providers for the purposes of MSP as a minimum. This is important for the use of the data without restriction, and in time this will benefit the MSP lifecycle by maintaining transparency of the data holdings and allowing more complete and effective analyses of interactions between datasets.

It is recommended that MSP data from public bodies and other data providers, should be first and foremost discoverable and accessible from the Ireland's Open Data Portal: https://data.gov.ie (DATA.GOV.IE, 2018). We would recommend using a simple traffic light system in the search results to reflect any licence restrictions to users at a glance. It is suggested where practicable that datasets are signposted with links back to the source dataset or API (via harvestable metadata), thereby using a common data download location to ensure that there is only one version of the 'true' dataset instilling user confidence in the data. This means that the data provider/custodian retains responsibility for maintaining the data and metadata and ensures that the latest and most up to date dataset is available, to known standards, accompanied by metadata completed by people that understand the data best.

Promoting the national Open Data Portal will help streamline and focus the user experience, especially for developers, ensuring that they can discover all relevant data from one location. Then to visualise and query the data online, they would be steered to the next iteration of the Marine Atlas.

To facilitate the user experience, the search functionality in the national Open Data Portal would benefit from a review to include a 'Marine' theme with subcategories (see Figure 7) and consider themes/activities relevant to MSP and used in the Marine Atlas, including subcategories that are currently missing, such as recreational and socio-economic activities. These could relate to an MSP specific controlled vocabulary created by the MI.

Figure 7. MEDIN's marine themes

The Marine Atlas currently includes many of the best practice functions of MSP web map portals, however, some initial improvements could be made to help engage with stakeholders early in the MSP process, in particular:

- Data themes need revising to be more relevant to MSP with subcategories by sector, to help stakeholders locate datasets of interest;
- Improvements to the source metadata to ensure they are not only INSPIRE compliant, but also provide useful descriptions and lineage information about each dataset from an MSP perspective;
- Querying of individual features i.e. identify tool shows details at the individual record level, rather than just at the dataset level;
- Measure tool;
- View attribute table;
- Facility for stakeholders to provide data to the portal; and
- Improve functionality and speed of the current Atlas.

With regard to engaging stakeholders in the MSP process, several high-level groups have been identified in this report:

- Statutory Agencies
- Marine Industry/ Business
- Marine Users/ Primary Impact Users
- Coastal Communities/ Secondary Impact Users
- Academia
- Neighbouring jurisdiction

These groups can be further split into internal (statutory agencies and local authority stakeholder groups) and external users for the purpose of the MSP process. Users in each group will have a range of interactions with information relating to MSP, from internal users potentially working from a common internal GIS platform, marine users submitting citizen data, through to developers running conflict analyses to identify potential sites. Access to data for stakeholders will then be determined through a combination of where they sit in the aforementioned groups, data licencing and system access credentials where applicable. This experience for users will potentially vary between systems and offer different levels of interaction, from discovering, viewing, analysing online interactively to downloading the data.

Whatever technologies, systems and tools are pursued along the MSP journey, following a defined IT digital service standard for any new systems or code developments undertaken (E.g. on viewers, portals, APIs) will ensure good coding and IT service practices are in place. This will help to ensure that efficiently coded and maintained 'open' first solutions are used during the MSP process, with the potential for loss of technical knowledge minimised through good service management and readiness for future development of technologies to meet future MSP needs.

Further consideration should also be given to the wider adoption of publishing linked data for MSP datasets to improve persistence of data URIs on the web, enable better discovery of other related data and unlock the future potential to utilise machine learning for more intelligent Decision Support Tools.

Building on the Marine Atlas combined with establishing an informative online MSP experience will set the scene for effective engagement with the various stakeholder groups. This can then be built upon as required in an iterative process to deliver new functionality and relevant content to the MSP process as it moves forward.

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9 Abbreviations/Acronyms

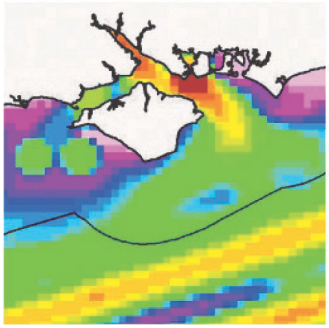
AA	Appropriate Assessment
API	Application programming interface
ArcGIS	A geographic information system (GIS) for working with maps and geographic information produced by Esri
CC	Creative Commons Licence
Defra	Department for Environment, Food and Rural Affairs
DG MARE	Directorate-General for Maritime Affairs and Fisheries, European Commission
DHPLG	Ministry for Housing, Planning and Local Government
DSTs	Decision Support Tools
EIA	Environmental Impact Assessment
EMFF	European Maritime and Fisheries Fund
EPA	Environmental Protection Agency (Ireland)
EU	European Union
FAIR	Findable Accessible Interoperable Re-usable
FAQ	Frequently Asked Questions
GEBCO	General Bathymetric Chart of the Oceans
GEMINI	GEo-spatial Metadata INteroperability iNItiative
GeoHive	Geo Spatial Data Tool for Ireland (Ordnance Survey Ireland)
GeoJSON	Format for encoding a variety of geographic data structures
GIS	Geographic Information System
GPS	Global Positioning System
HELCOM	Baltic Marine Environment Protection Commission – Helsinki Commission
HOOW	Harnessing Our Ocean Wealth
HTTP	HyperText Transfer Protocol
HTTPS	HyperText Transfer Protocol Secure
IMCG	Inter-Departmental Marine Coordination Group
INFOMAR	INtegrated Mapping FOr the Sustainable Development of Ireland's MArine Resource
INSPIRE	Infrastructure for Spatial Information in Europe
INSS	Irish National Seabed Survey
IPAS	Integrated Petroleum Affairs System
ISDE	Irish Spatial Data Exchange
ISO	International Organization for Standardization
IT	Information Technology
JSON	Format for encoding a variety of geographic data structures
JSON-LD	Format for encoding a variety of geographic data structures
Lat	Latitude
LiDAR	Light Detection and Ranging
Long	Longitude
MAP-MEP	Interactive energy map of the North Sea
Mapinfo	Desktop GIS software (Pitney Bowes)
Marine DEM	Marine Themes Digital Elevation Model
MEDIN	Marine Environmental Data and Information Network
MI	Marine Institute
MMO	Marine Management Organisation
MP	Member of Parliament
MSP	Marine Spatial Planning
MSPP	Marine Spatial Planning Pilot
NASA	National Aeronautics and Space Administration
NMPi	National Marine Plan interactive

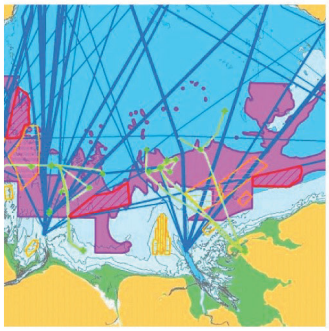
NPWS	National Parks and Wildlife Service
OAuth2	Open authorisation framework
OS	Ordnance Survey
OSi	Ordnance Survey Ireland
PacMARA	Pacific Marine Analysis and Research Association
png	Portable Network Graphics
REST	Representational State Transfer
SAC	Special Areas of Conservation
SDI	Spatial Data Infrastructure
SEA	Strategic Environmental Assessment
SOP	standard operating procedure
SPIRE	Spatial Information Repository
TCE	The Crown Estate
TopoJSON	Format for encoding topography – an extension of GeoJson
UK	United Kingdom
UNESCO	United Nations Educational, Scientific and Cultural Organization
URI	Uniform Resource Identifiers
URL	Uniform Resource Locator
UTF-8	Unicode Transformation Format Standard
W3C	World Wide Web Consortium
WCAG	Web Content Accessibility Guidelines
WCS	Web coverage service
WebGIS	Web based Geographic Information Systems Resource
WEC	Westheimer Energy Consultants
WFS	Web feature service
WMS	Web map services

Cardinal points/directions are used unless otherwise stated.

SI units are used unless otherwise stated.

Appendix



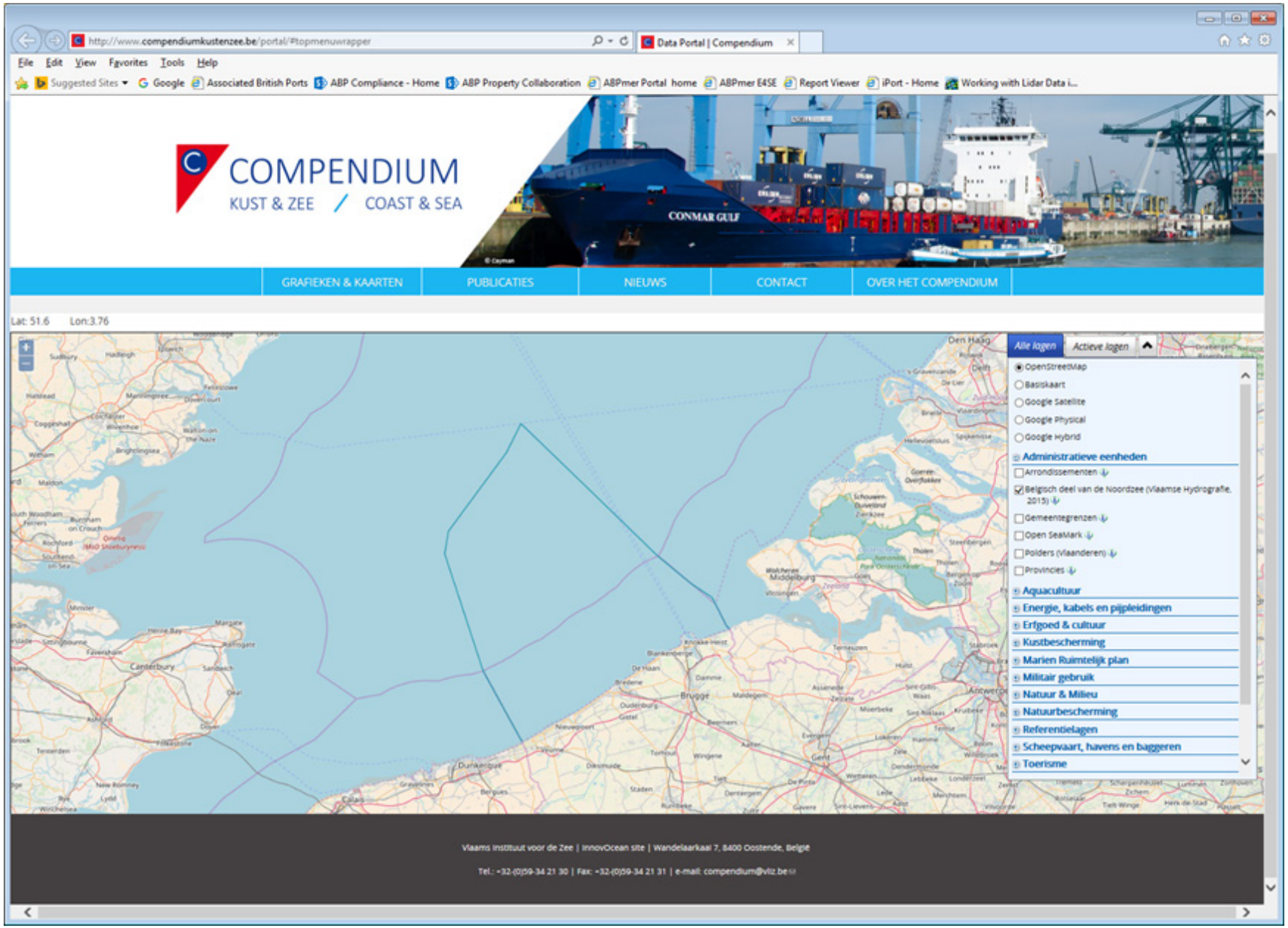

Innovative Thinking - Sustainable Solutions

ABP mer

A Completed Data Portal Review Questionnaires

A.1 Compendium for Coast and Sea, Flanders Marine Institute

Basic functionality	Yes (No scale bar, legend)		**Additional features**	N/A
Base maps	x 5: OpenStreetMap, Basiskaart, Google: Satellite, physical, hybrid		**Layer categories**	Base maps, administrative, aquaculture, energy, heritage and culture, coastal protection, marine plans, military, nature and environment, protected areas, reference layers, shipping, tourism, fishing, marine infrastructure, sand extraction.
Overview map	No			
Link to source/metadata	Yes			
Contact/feedback	Yes			
Print function	No			


http://www.compendiumkustenzee.be/portal/#topmenuwrapper
Data Portal | Compendium
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
COMPENDIUM
KUST & ZEE / COAST & SEA
CONMAR GULF
GRAFIEKEN & KAARTEN
PUBLICATIES
NIEUWS
CONTACT
OVER HET COMPENDIUM
Lat: 51.6 Lon:3.76
Alle lagen
Actieve lagen
OpenStreetMap
Basiskaart
Google Satellite
Google Physical
Google Hybrid
Administratieve eenheden
Arrondissementen
Belgisch deel van de Noordzee (Vlaamse Hydrografie, 2015)
Gemeentegrenzen
Open SeaMark
Polders (Vlaanderen)
Provincies
Aquacultuur
Energie, kabels en pijpleidingen
Erfgoed & cultuur
Kustbescherming
Marien Ruimtelijk plan
Militair gebruik
Natuur & Milieu
Natuurbescherming
Referentielagen
Scheepvaart, havens en baggeren
Toerisme
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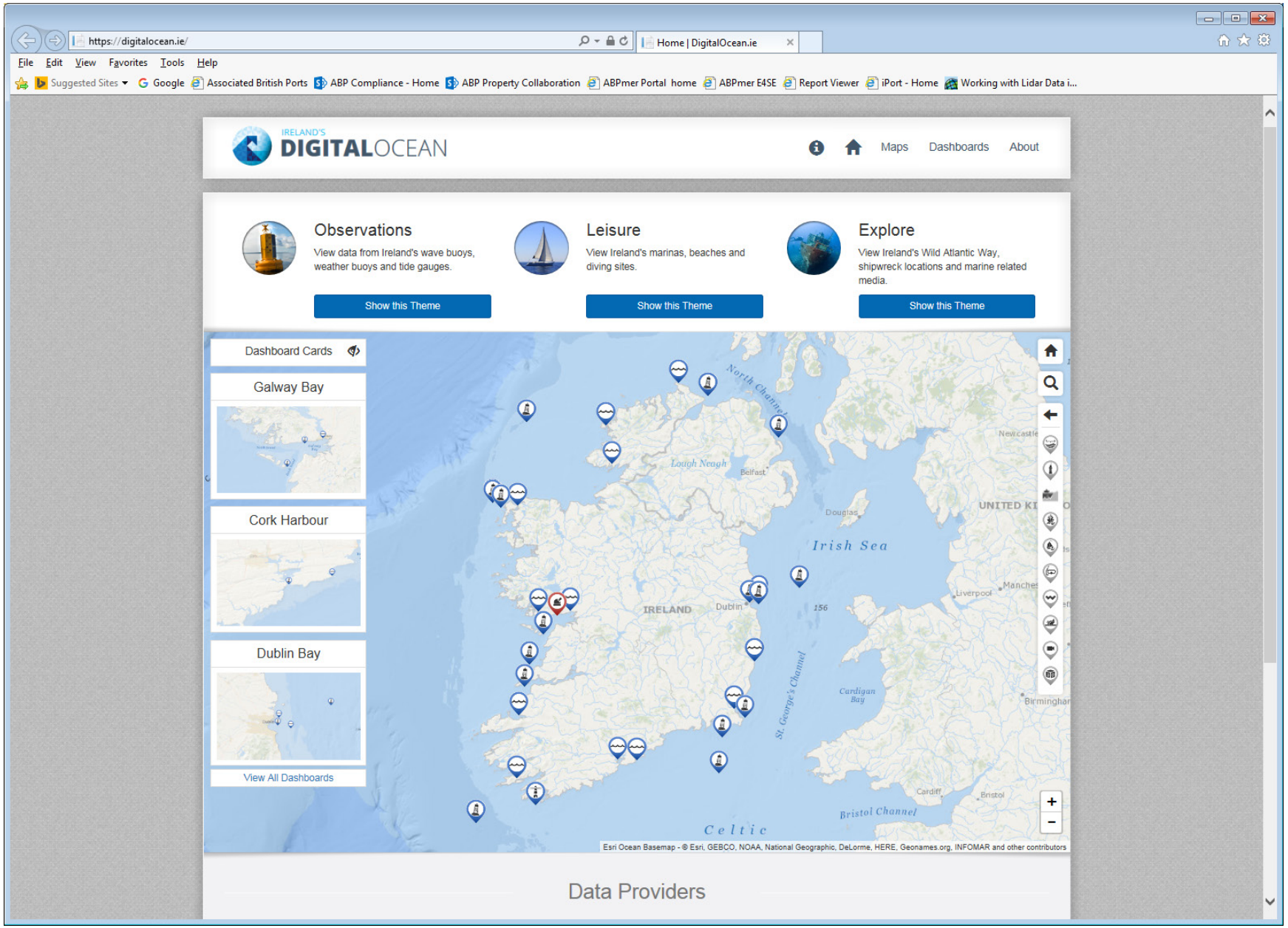
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		N
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	Yes, via information button relating to the marine plan areas data layer.	Y
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4	General contacts page.	Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		N
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Zoom to marine plan area/national extent	Desirable	2		N
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4	Issues loading some data layers at time of testing.	N
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		N
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		N
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		N
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.2 Digital Ocean

Basic functionality	Pan and Zoom only		**Additional features**	Link to download data, Zoom to Bay, Search for Bay, View Themes. On zoom to bay, panels displaying tide and weather information are displayed.
Base maps	No			
Overview map	No			
Link to source/metadata	Source			
Contact/feedback	No		**Layer categories**	EPA beaches, Argo floats, Bathymetry, Commercial ports, Marinas, Dive sites, Wild Atlantic Way, Shipwrecks, Videos and Photos, 3D Models.
Print function	No			


https://digitalocean.ie/
Home | DigitalOcean.ie
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
IRELAND'S DIGITALOCEAN
Maps Dashboards About
Observations
View data from Ireland's wave buoys, weather buoys and tide gauges.
Show this Theme
Leisure
View Ireland's marinas, beaches and diving sites.
Show this Theme
Explore
View Ireland's Wild Atlantic Way, shipwreck locations and marine related media.
Show this Theme
Dashboard Cards
Galway Bay
Cork Harbour
Dublin Bay
View All Dashboards
North Channel
Lough Neagh
Belfast
Douglas
Irish Sea
IRELAND
Dublin
Liverpool
St. George's Channel
Cardigan Bay
Cardiff
Bristol
Bristol Channel
Celtic
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Data Providers

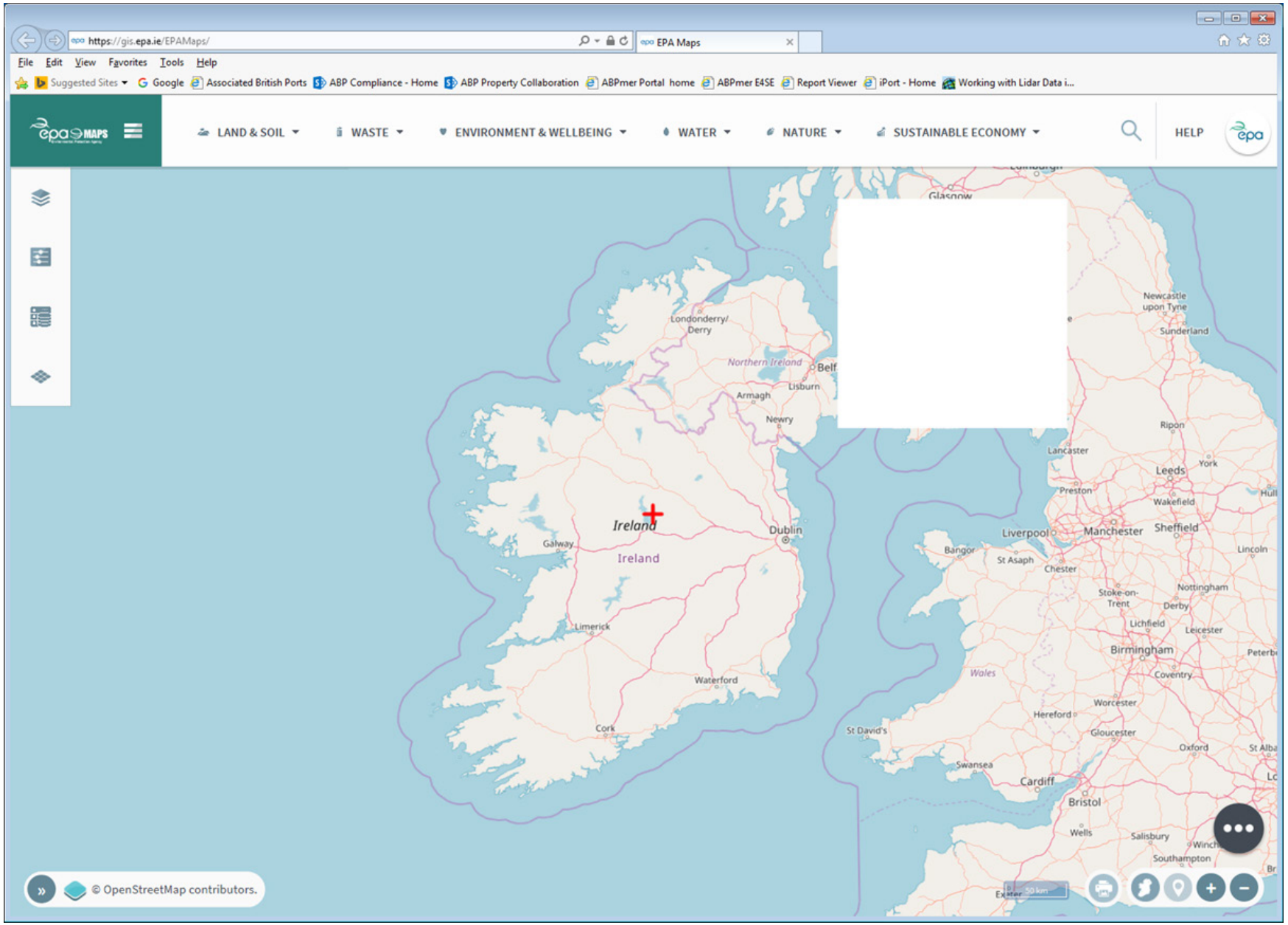
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4	Limited information in link which opens separate webpage	Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	Source data layers may have metadata, but links go to data providers website, rather than to metadata for data layer.	N
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		N
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	N/A	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3	Limited 3-step guide to using site,	Y
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		N
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Zoom to marine plan area/national extent	Desirable	2	Zoom to default (Ireland)	Y
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3	Three themes: ▪ Observations ▪ Leisure ▪ Explore	Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		N
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		N
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2	User can zoom to pre-selected bays/harbours	Y
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.3 EPA Maps

Basic functionality	Yes (No mouse coordinates)		**Additional features**	Drop down menu for county/town, free text search for address, Search by coordinates, layer transparency, order layers, zoom to layer, filter data layer based on attributes, identify tool including associated attribute table values, export search results to .csv, line measure, area measure, get coordinates, graphics and text tools (create and edit), show user location (currently disabled)
Base maps	x3: Bing maps, OpenStreetMap, Watercolour			
Overview map	No			
Link to source/metadata	Yes			
Contact/feedback	No (feedback for GIS functionality only)			
Print function	Export map to image		**Layer categories**	Land and Soil, Waste, Environmental and Wellbeing, Water, Nature, Sustainable Economy


https://gis.epa.ie/EPAMaps/
EPA Maps
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
LAND & SOIL
WASTE
ENVIRONMENT & WELLBEING
WATER
NATURE
SUSTAINABLE ECONOMY
HELP
Londonderry/ Derry
Northern Ireland
Belf
Lisburn
Armagh
Newry
Ireland
Dublin
Galway
Limerick
Waterford
Cork
Glasgow
Newcastle upon Tyne
Sunderland
Ripon
Lancaster
Leeds
York
Preston
Wakefield
Hull
Liverpool
Manchester
Sheffield
Bangor
St Asaph
Chester
Lincoln
Stoke-on-Trent
Nottingham
Derby
Lichfield
Leicester
Birmingham
Coventry
Wales
Worcester
Hereford
St David's
Gloucester
Oxford
Swansea
Cardiff
Bristol
Wells
Salisbury
Southampton
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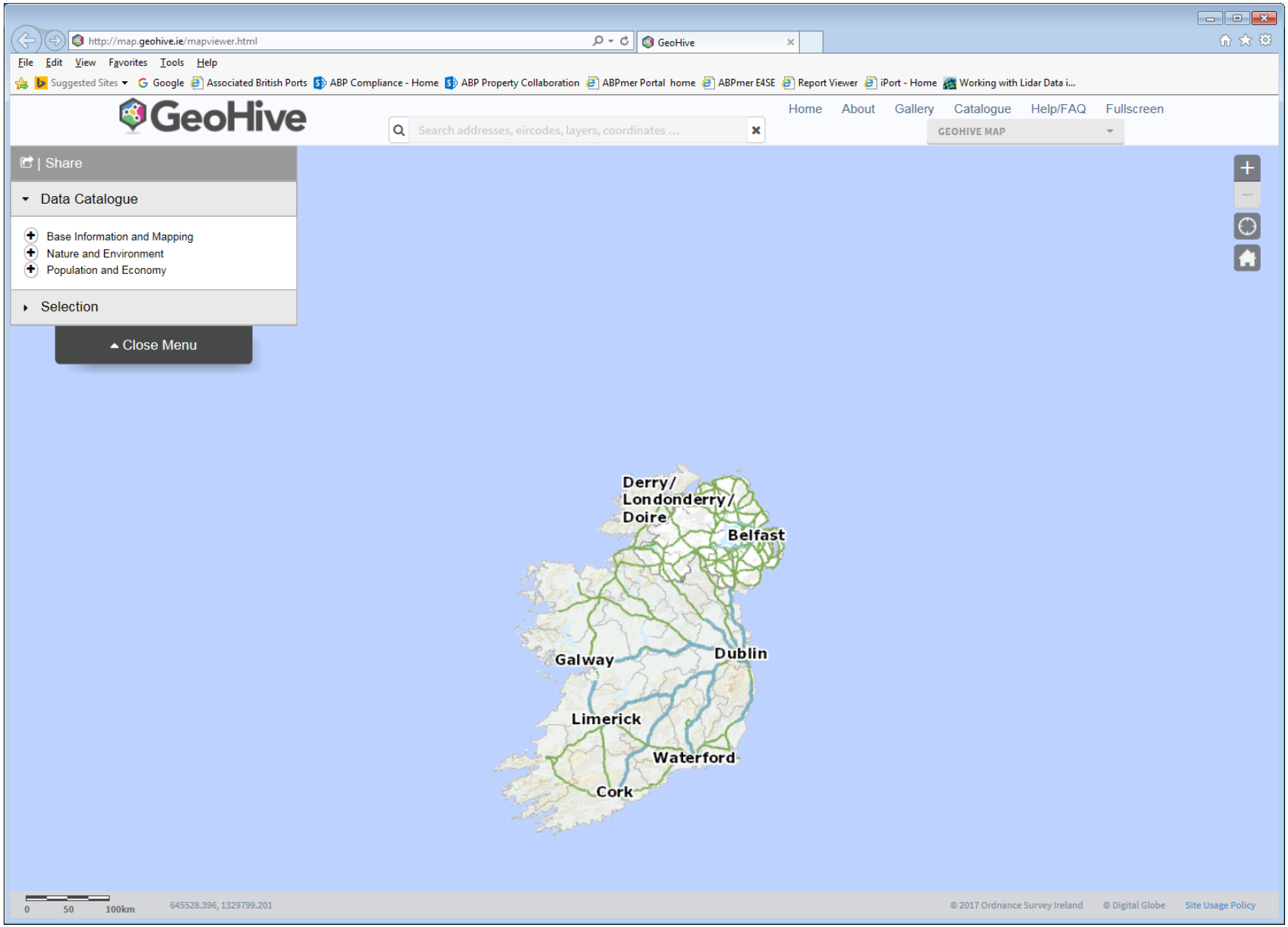
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		N
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		Y
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	N/A	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		Y
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Data layers grouped in themes relevant to EPA, Appropriate Assessment or Sewage Treatment	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Zoom to layer	Desirable	2		Y
Zoom to marine plan area/national extent	Desirable	2	Zoom to Ireland.	Y
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Link to data provider page with download data facility.	Y
Can the data be downloaded free of charge?	Desirable	2	It can from data provider's webpage.	N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		Y
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		Y
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		Y
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3	Print to .png, but no legend.	Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		Y
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		Y
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		Y
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		Y
Export maps to downloadable images	Advanced functionality	3		Y
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.4 GeoHive

Basic functionality	Yes		**Additional features**	Layer ordering, Layer transparency, Fullscreen Option, User location, Free text search (addresses, eircodes, layers, coordinates). Share function: Save to online gallery, share with social media, email. Help/FAQ section.
Base maps	x9: GeoHive, Aerial, Aerial 2005, Aerial 2000, Aerial 1995, Digital Globe, Historic x 3, Cassini.			
Overview map	No			
Link to source/metadata	Source			
Contact/feedback	Link to email address			
Print function	No		**Layer categories**	Base Information and Mapping (Basemaps) Nature and Environment: Agriculture, Environment Conservation and Heritage, Geology, Hydrography Population and Economy: Census data, Education, Health, Planning and Development, Population Statistics, Public/Government Services, Transport.


http://map.geohive.ie/mapviewer.html
GeoHive
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
GeoHive
Home About Gallery Catalogue Help/FAQ Fullscreen
Search addresses, eircodes, layers, coordinates ...
GEOHIVE MAP
| Share
Data Catalogue
Base Information and Mapping
Nature and Environment
Population and Economy
Selection
Close Menu
Derry/ Londonderry/ Doire
Belfast
Galway
Dublin
Limerick
Waterford
Cork
0 50 100km
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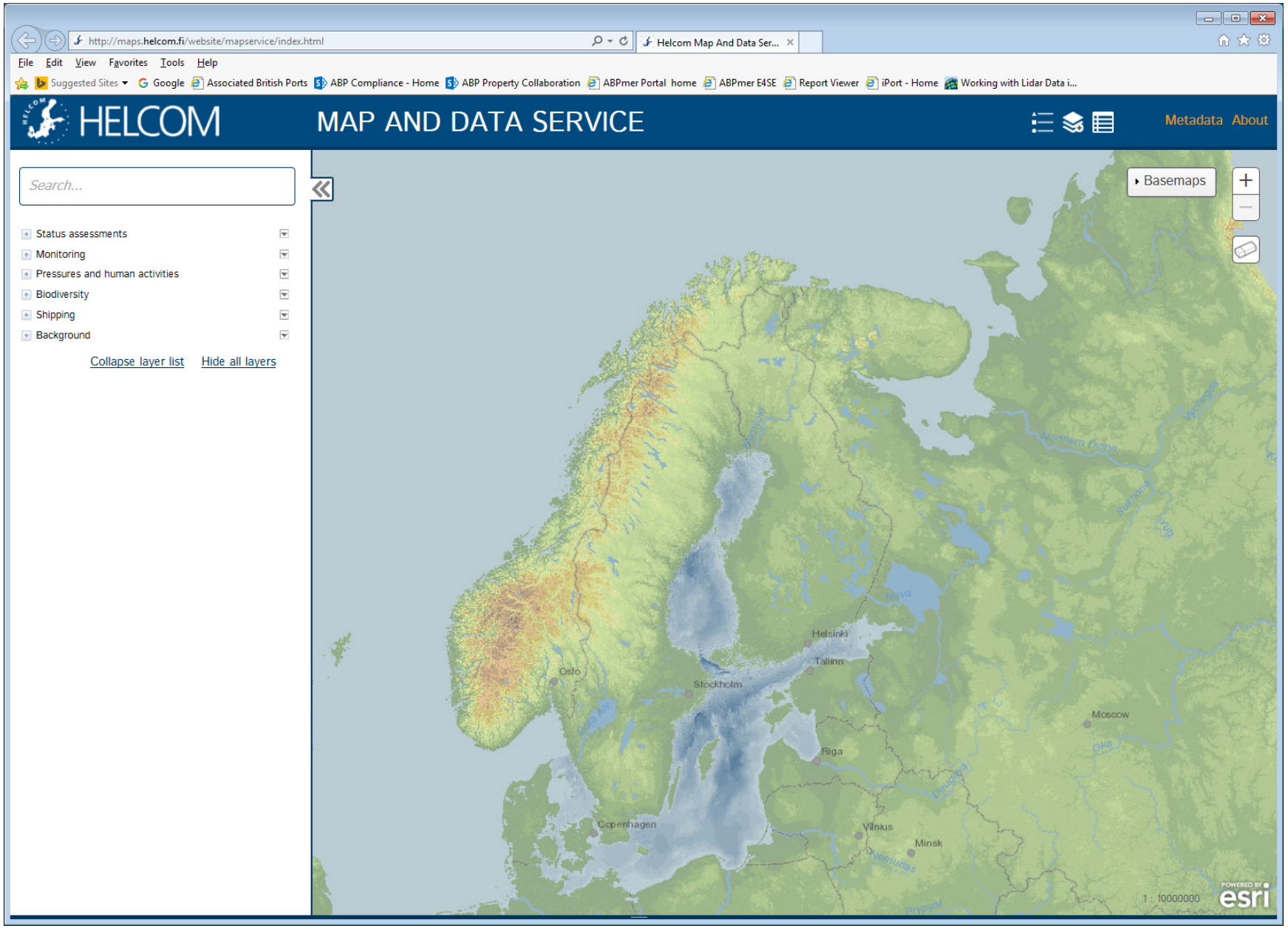
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4	Not for all layers	Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		Y
Coordinates display (e.g. Lat/ Long)	Desirable	3		N
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	n/a	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		Y
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3	Summary given is brief.	Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2	Zoom to default extent	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4	Can only see legend if click on Infobox of every dataset selected	N
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		Y
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3	Can only search for locations or maps.	N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		Y
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2	Collapsible but not moveable.	Y
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		Y
Show GPS location – track user location	Advanced functionality	3		Y
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2	Save to an online gallery	Y
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.5 HELCOM Maps And Data Service

Basic functionality	Limited: pan and zoom, coordinates, scale		**Additional features**	Layer transparency, Layer ordering, Clear map selection
Base maps	Basic: elevation/bathy or land/sea		**Layer categories**	Status assessments, Monitoring, Pressures and human activities, Biodiversity, Shipping, Background.
Overview map	No			
Link to source/metadata	Yes			
Contact/feedback	No			
Print function	No			


http://maps.helcom.fi/website/mapservice/index.html
Helcom Map And Data Ser...
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
HELCOM
MAP AND DATA SERVICE
Metadata About
Search...
Status assessments
Monitoring
Pressures and human activities
Biodiversity
Shipping
Background
Collapse layer list
Hide all layers
Basemaps
Helsinki
Tallinn
Oslo
Stockholm
Moscow
Riga
Copenhagen
Vilnius
Minsk
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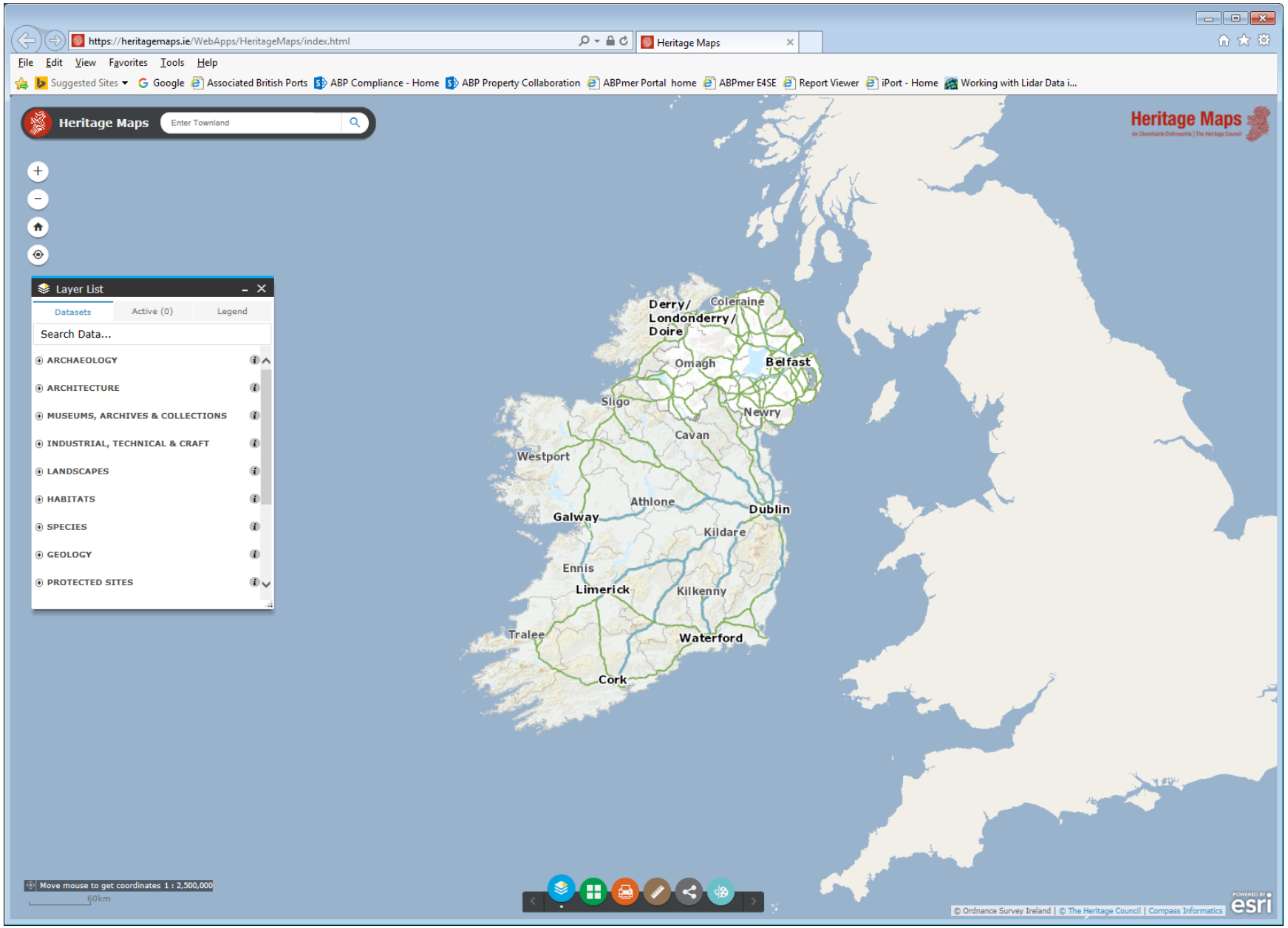
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		Y
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		Y
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4		Y
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		Y
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Top level themes: ▪ Status assessments ▪ Monitoring ▪ Pressures and human activities ▪ Biodiversity ▪ Shipping ▪ Background	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3	Some layers just have the name, some have a fuller description.	Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		Y
Zoom to marine plan area/national extent	Desirable	2		N
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Via link to separate metadata page	Y
Can the data be downloaded free of charge?	Desirable	2		Y
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		Y
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	For tool tips only	Y
Free text search for data	Desirable	3		Y
Keyword search of data to highlight layers containing keyword	Desirable	3		Y
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3	Does not work very well – legend and summary box difficult to view, etc.	N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.6 Heritage Maps

Basic functionality	Yes		**Additional features**	Active layers tab. Layers + Active layers + Legend in one moveable/dockable panel. Area and Line measurement, Location coordinates tool. Share map function (social media, email, map link, embed. Draw tools: User can draw/edit graphics, text and include Area and Distance measurements. Free text search and suggestions for location. Track user location.
Base maps	x10: OSi: Public, Discovery, Cassini, Historic x 2, Ortho x 4, Digital Globe			
Overview map	No			
Link to source/metadata	Yes (Where available)			
Contact/feedback	No			
Print function	Print to template, pdf, image, resize print area, print area displayed on-screen, print quality, option to include legend, metadata.		**Layer categories**	Archaeology, Architecture, Museums, Industrial Technical and Craft, Landscapes, Habitats, Species, Geology, Protected Sites, Tourism Recreation and Amenity, Coastal and Marine, Planning, Administrative Boundaries, Rivers and Lakes.


https://heritagemaps.ie/WebApps/HeritageMaps/index.html
Heritage Maps
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
Heritage Maps
Enter Townland
Heritage Maps
Layer List
Datasets
Active (0)
Legend
Search Data...
ARCHAEOLOGY
ARCHITECTURE
MUSEUMS, ARCHIVES & COLLECTIONS
INDUSTRIAL, TECHNICAL & CRAFT
LANDSCAPES
HABITATS
SPECIES
GEOLOGY
PROTECTED SITES
Derry/ Londonderry/ Doire
Coleraine
Omagh
Belfast
Sligo
Newry
Cavan
Westport
Athlone
Dublin
Galway
Kildare
Ennis
Limerick
Kilkenny
Tralee
Waterford
Cork
Move mouse to get coordinates 1 : 2,500,000
60km
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esri

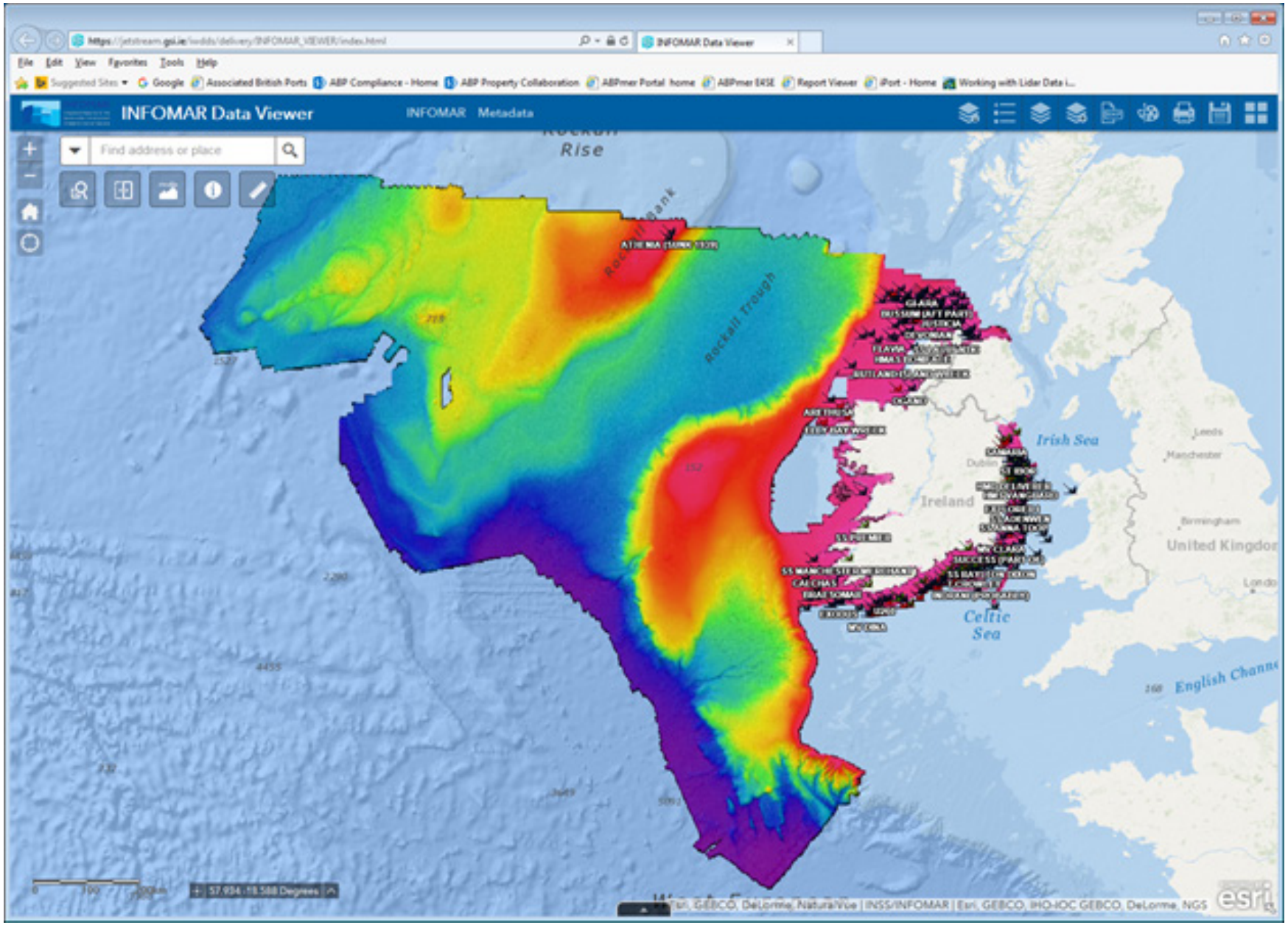
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		N
Data sources provided (where did it come from)	Expected	4	Not for all layers	Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4	Not for all layers	Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	Some layers link to INSPIRE metadata on the ISDE but not all.	Y
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4		N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		N
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		Y
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2	Zoom to default extent.	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2	Can only search for place names.	N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		Y
Identify/query tool	Desirable	4	If click on map can get information.	Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		Y
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		Y
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		Y
Show GPS location – track user location	Advanced functionality	3		Y
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2	Can draw graphics and add text but not save/upload graphics text files.	N
Export maps to downloadable images	Advanced functionality	3		Y
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.7 INFOMAR

Basic functionality	Yes		**Additional features**	Zoom to layer, layer transparency, layer ordering, Enable/disable pop up, Hide labels, view attribute table. Collapsible panel containing tabbed attribute tables for all data layers. Additional ability to filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv. Add services function: WMS, ArcGIS, Image service. Download data function, Function to add shapefile, Draw and add text tools, Save session, Swipe function, Identify tool, Area and line measure, location tool, free text search for address/location, add user location. Generate elevation profile: Draw a line on the map to generate an interactive elevation profile.
Base maps	x 10: x10 Esri			
Overview map	Yes			
Link to source/metadata	Basic information, link to ISDE data search page			
Contact/feedback	No			
Print function	Print to template, pdf, image, Options: scale, extent, show labels, show metadata, show legend, map size, print quality.		**Layer categories**	Shipwrecks, Samples, Maritime boundaries, Priority areas bays, Survey tracklines, Survey coverage, Seabed classification, Backscatter 10 m, INFOMAR Bathymetry and LiDAR shaded relief, INSS/INFOMAR/PAD Bathymetry and LiDAR Grids.


INFOMAR Data Viewer
INFOMAR Metadata
Find address or place
Rockall Trough
Irish Sea
Ireland
Celtic Sea
English Channel
United Kingdom
esri

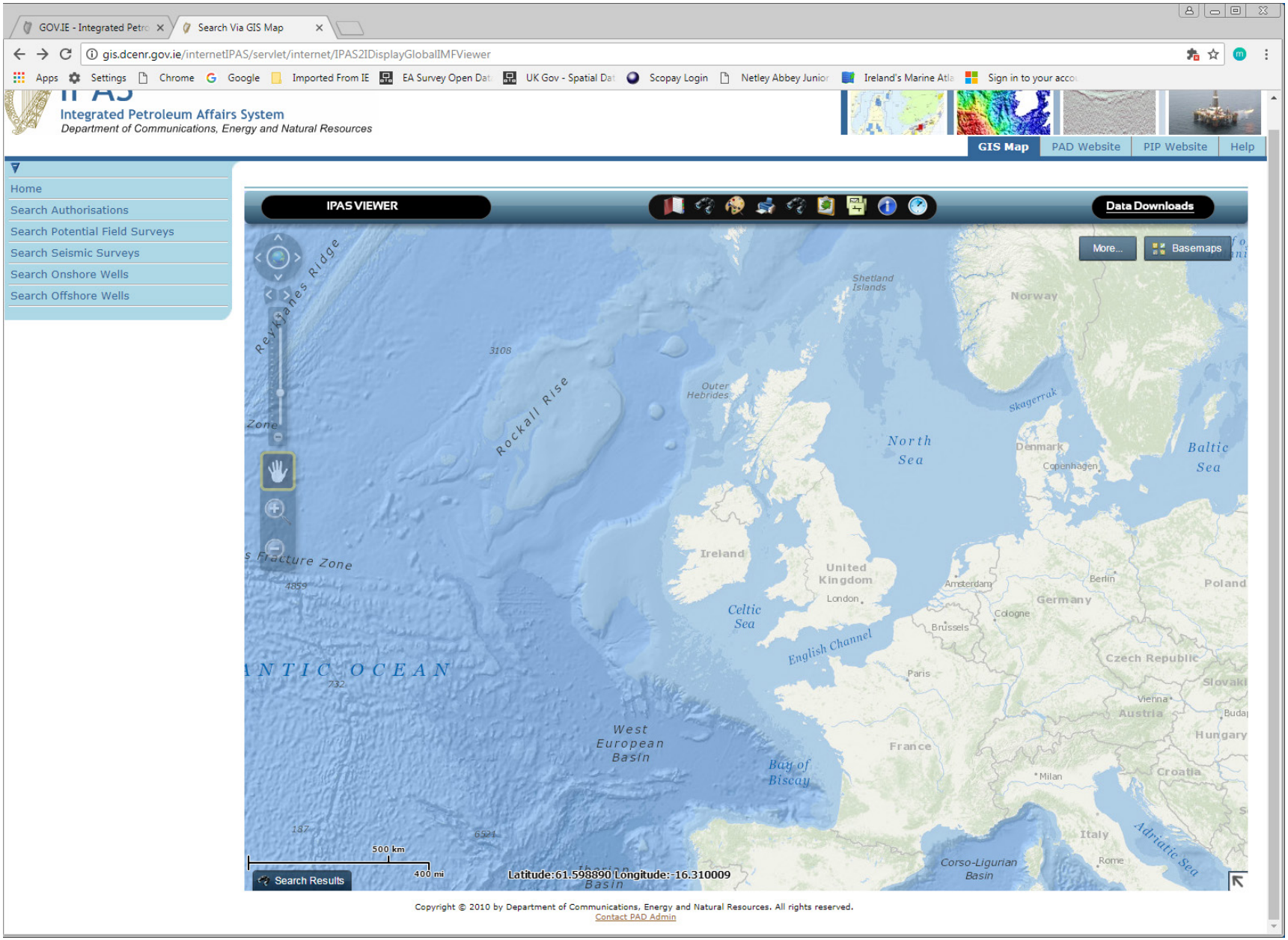
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		Y
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4		N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		Y
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Zoom to layer	Desirable	2		Y
Zoom to marine plan area/national extent	Desirable	2	Zoom to default extent	Y
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Via link to the Interactive Web Data Delivery System	Y
Can the data be downloaded free of charge?	Desirable	2		Y
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3	Esri	Y
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		Y
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		Y
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		Y
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		Y
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		Y
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		Y
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		Y
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		Y
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		Y
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2	Just collapsible	Y
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		Y
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		Y
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		Y
Facility for data input / upload? (adding user data)	Advanced functionality	3		Y
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		Y
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		Y
Feature to enable saving/loading of map configuration.	Advanced functionality	2		Y
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.8 IPAS Integrated Petroleum Affairs System

Basic functionality	Yes		**Additional features**	Enhanced search function for IPAS data only , Help section for the IPAS system, Bookmark. Draw graphics and add text. Legend on/off. Load shapefiles. Identify tool.
Base maps	x 3: Oceans, Imagery, Streets			
Overview map	No			
Link to source/metadata	No			
Contact/feedback	No		**Layer categories**	10 categories at top level with subcategories.
Print function	Print to template			


GOV.IE - Integrated Petro
Search Via GIS Map
gis.dcenr.gov.ie/internetIPAS/servlet/internet/IPAS2IDisplayGlobalIMFViewer
Integrated Petroleum Affairs System
Department of Communications, Energy and Natural Resources
GIS Map
PAD Website
PIP Website
Help
Home
Search Authorisations
Search Potential Field Surveys
Search Seismic Surveys
Search Onshore Wells
Search Offshore Wells
IPAS VIEWER
Data Downloads
More...
Basemaps
Reykjanes Ridge
Rockall Rise
Shetland Islands
Norway
Outer Hebrides
North Sea
Skagerrak
Denmark
Copenhagen
Baltic Sea
Ireland
United Kingdom
London
Amsterdam
Berlin
Poland
Germany
Cologne
Brussels
Celtic Sea
English Channel
Paris
Czech Republic
Slovaki
Vienna
Austria
Hungary
France
West European Basin
Bay of Biscay
Milan
Croatia
Italy
Adriatic Sea
Rome
Corso-Ligurian Basin
Fracture Zone
ANTIC OCEAN
500 km
400 mi
Search Results
Latitude: 61.598890 Longitude: -16.310009
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Contact PAD Admin

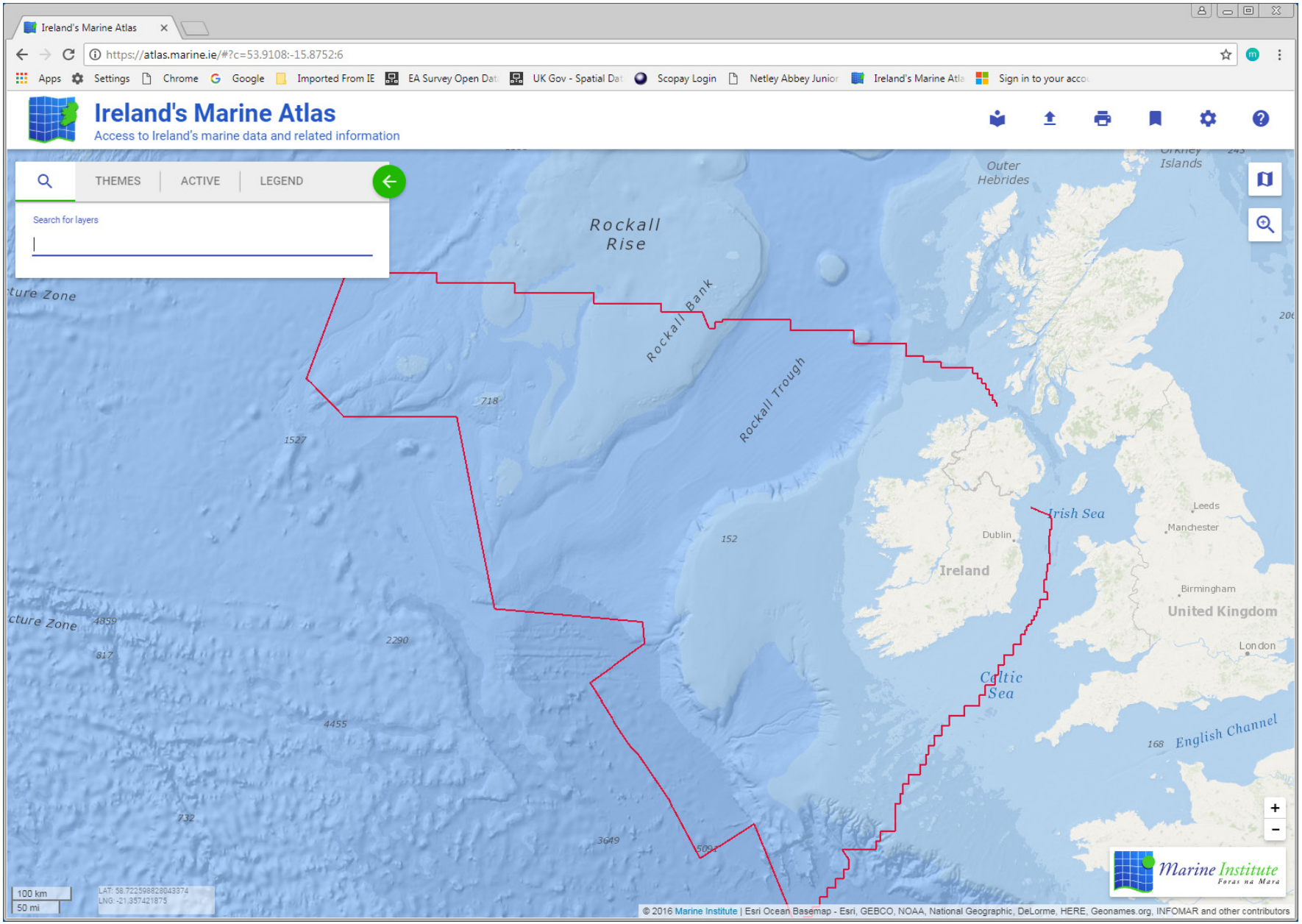
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		N
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	N/A	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3	Brief guidance in Help page.	Y
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		N
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Ten themes including: ▪ Maritime limits ▪ Offshore Data ▪ Infrastructure ▪ Offshore Geology ▪ IPAS Bathymetry	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2	Via Query tool	Y
Zoom to marine plan area/national extent	Desirable	2	N/A	N
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Data Downloads link present, but not functioning.	N
Can the data be downloaded free of charge?	Desirable	2	See above.	N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3	Upload facility for Shapefiles.	Y
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		Y
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	Tool tips only	Y
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		N
Access attribute table	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		Y
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		Y
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.9 Ireland's Marine Atlas

Basic functionality	Yes		**Additional features**	Free text search for data/layers and suggestions for zoom to bay locations, Help section, View only active layers in separate table of contents. Switch all active layers on/off. Summary information on querying feature. Bookmark.
Base maps	x 5: GEBCO Global Relief, Grey Canvas, National Geographic, Ocean Basemap, World Terrain Base			
Overview map	No			
Link to source/metadata	Yes			
Contact/feedback	Yes		**Layer categories**	Many layer categories at same level (28 categories at top level) with subcategories.
Print function	Print to template			


Ireland's Marine Atlas
https://atlas.marine.ie/#?c=53.9108:-15.8752:6
Ireland's Marine Atlas
Access to Ireland's marine data and related information
THEMES
ACTIVE
LEGEND
Search for layers
Rockall Rise
Rockall Bank
Rockall Trough
Outer Hebrides
Irish Sea
Ireland
Dublin
Leeds
Manchester
Birmingham
United Kingdom
London
Celtic Sea
English Channel
Marine Institute
© 2016 Marine Institute | Esri Ocean Basemap - Esri, GEBCO, NOAA, National Geographic, DeLorme, HERE, Geonames.org, INFOMAR and other contributors

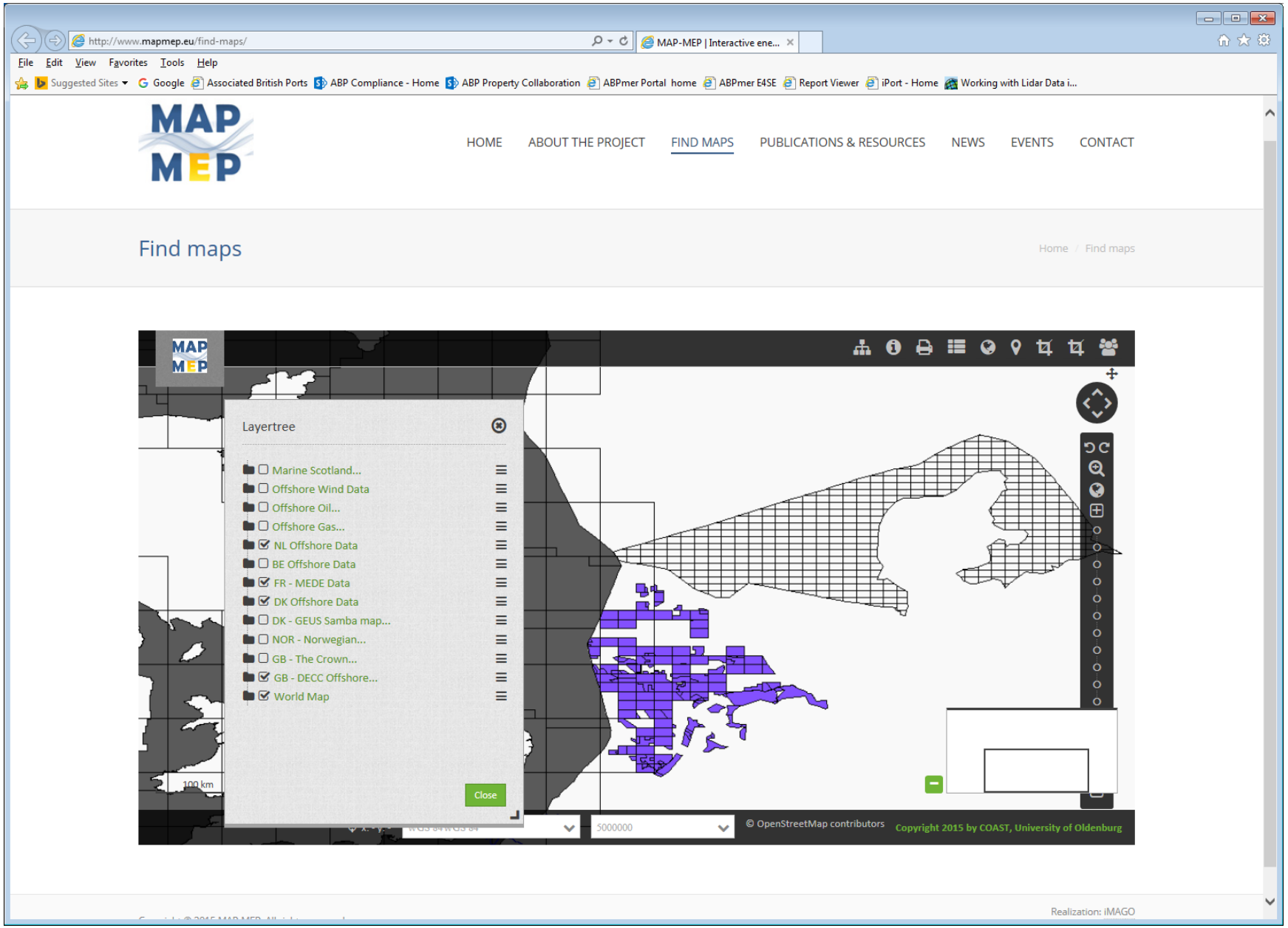
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		Y
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4	Via metadata link for each data layer.	Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4	Link to metadata on ISDE	Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	INSPIRE standard	Y
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	N/A	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3		Y
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		Y
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		Y
Can the data be downloaded free of charge?	Desirable	2		Y
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3	Upload facility for GeoJSON, TopoJSON and zipped Shapefiles.	Y
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3	However, user can switch on/off all data layers within a subcategory with one click.	N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		Y
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4	Left mouse click (rather than actual tool (brings up data layer summary, but not details of actual record queried).	Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	Tool tips only	Y
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		Y
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.10 MAP-MEP: Interactive Energy Map of the North Sea (COAST, University of Oldenburg)

Basic functionality	Yes		**Additional features**	Information tool, Add WMS Layer, Layer transparency, Zoom to layer, Line/Area measurement tool, Layer ordering, Floating table of contents, Show user GPS location.
Base maps	x1: World map			
Overview map	Yes			
Link to source/metadata	Yes		**Layer categories**	Offshore energy data, Offshore data for neighbouring nations.
Contact/feedback	No			
Print function	Print to template, pdf.			


http://www.mapmep.eu/find-maps/
MAP-MEP | Interactive ene...
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
MAP MEP
HOME ABOUT THE PROJECT FIND MAPS PUBLICATIONS & RESOURCES NEWS EVENTS CONTACT
Find maps
Home / Find maps
Layertree
Marine Scotland...
Offshore Wind Data
Offshore Oil...
Offshore Gas...
NL Offshore Data
BE Offshore Data
FR - MEDE Data
DK Offshore Data
DK - GEUS Samba map...
NOR - Norwegian...
GB - The Crown...
GB - DECC Offshore...
World Map
Close
100 km
5000000
© OpenStreetMap contributors
Copyright 2015 by COAST, University of Oldenburg
Realization: iMAGO

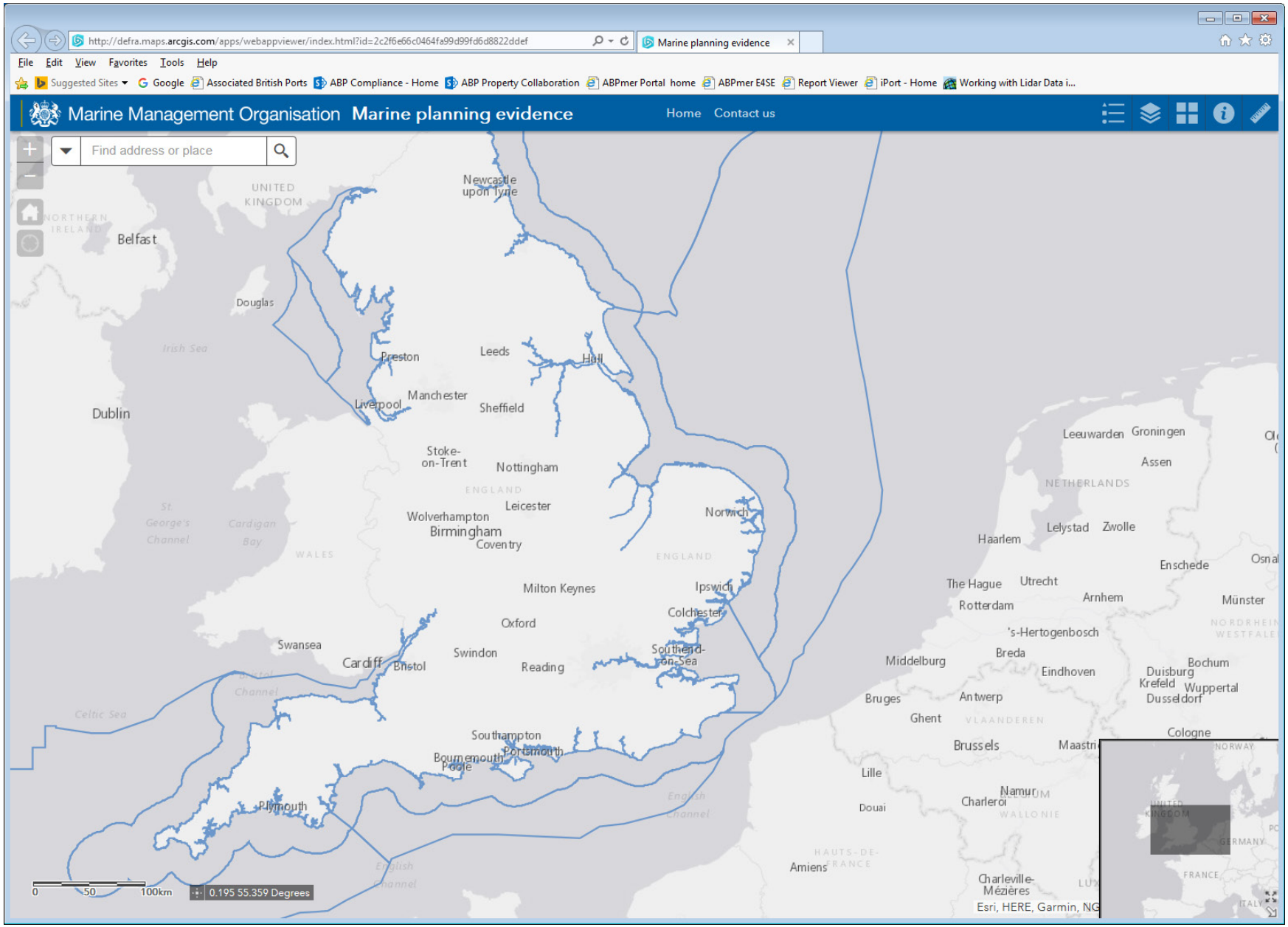
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4	But does not fill available window.	Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	Not clear if metadata complies with a standard.	N
Portal News page (changes, updates, future developments)	Desirable	2		Y
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	N/A	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3	Version number, but not date.	Y
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		N
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Categorised by country / energy type.	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		Y
Zoom to marine plan area/national extent	Desirable	2	Zoom to default Europe view.	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		Y
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		Y
Choice of base map	Desirable	3		N
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		Y
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	For tool tips only	Y
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3	Unable to minimise legend or turn layers/on and off.	Y
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		Y
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		Y
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.11 Marine Management Organisation Marine Planning Evidence

Basic functionality	Yes		**Additional features**	Free text search and suggestions for locations, zoom to layer, area measure, line measure, information tool
Base maps	x 10: Esri x 10		**Layer categories**	Many layer categories at same level, approximately 54 categories at top level, some with subcategories.
Overview map	Yes			
Link to source/metadata	Yes			
Contact/feedback	Yes			
Print function	No			


http://defra.maps.arcgis.com/apps/webappviewer/index.html?id=2c2f6e66c0464fa99d99fd6d8822ddef
Marine planning evidence
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
Marine Management Organisation Marine planning evidence
Home Contact us
Find address or place
UNITED KINGDOM
NORTHERN IRELAND
Belfast
Douglas
Irish Sea
Newcastle upon Tyne
Preston
Leeds
Hull
Liverpool
Manchester
Sheffield
Dublin
Stoke-on-Trent
Nottingham
ENGLAND
Leicester
Wolverhampton
Birmingham
Coventry
Norwich
St George's Channel
Cardigan Bay
WALES
Milton Keynes
Ipswich
Oxford
Colchester
Swansea
Cardiff
Bristol
Swindon
Reading
Southend-on-Sea
Bristol Channel
Celtic Sea
Southampton
Portsmouth
Bournemouth
Poole
Plymouth
English Channel
Leeuwarden
Groningen
Assen
NETHERLANDS
Haarlem
Lelystad
Zwolle
Enschede
The Hague
Utrecht
Arnhem
Rotterdam
Münster
's-Hertogenbosch
Middelburg
Breda
Eindhoven
Duisburg
Bochum
Krefeld
Wuppertal
Dusseldorf
Bruges
Antwerp
Ghent
VLAANDEREN
Cologne
Brussels
Lille
Douai
Namur
Charleroi
WALLONIE
HAUTS-DE-FRANCE
Amiens
Charleville-Mézières
Esri, HERE, Garmin, NG
0 50 100km
0.195 55.359 Degrees

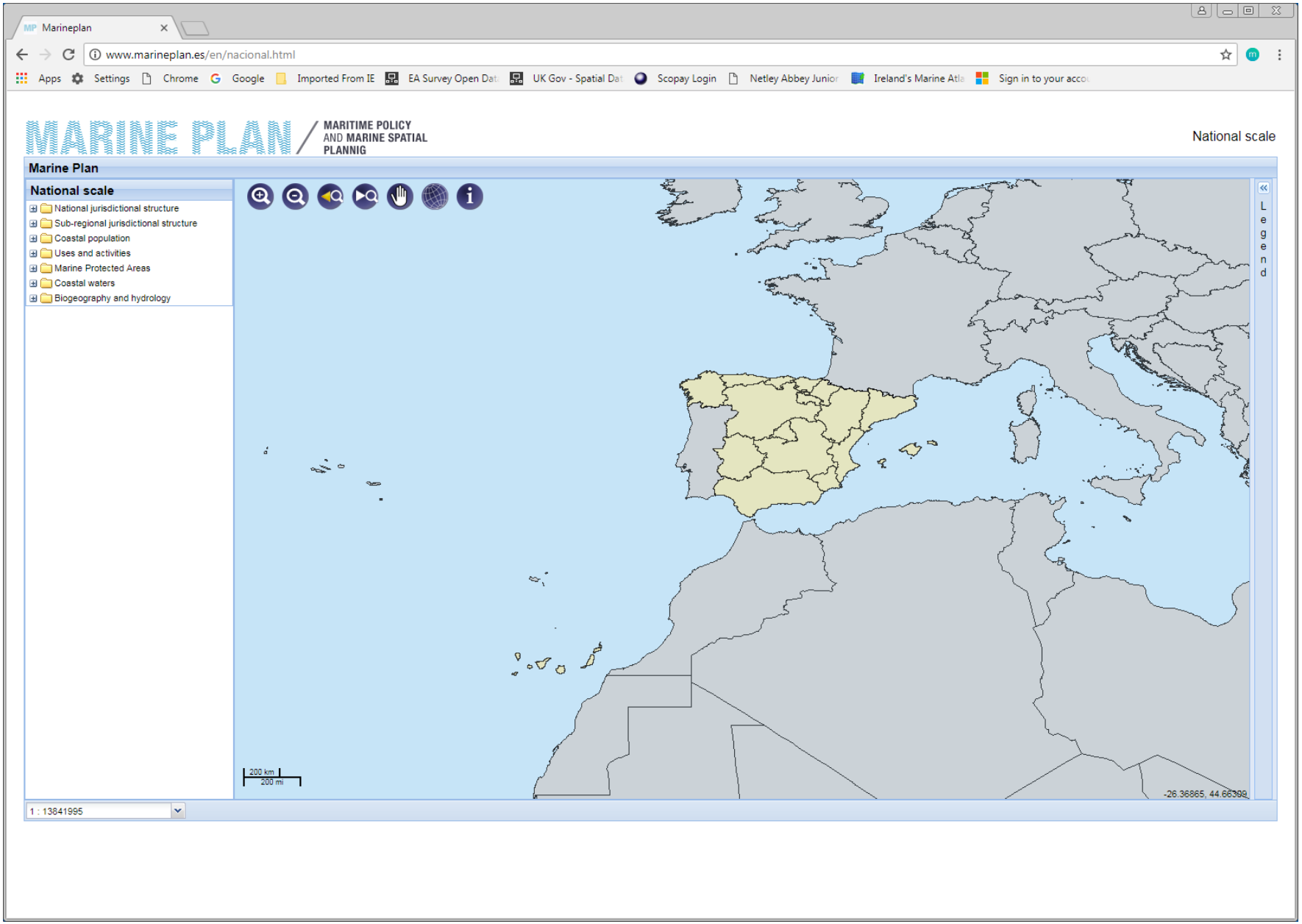
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		Y
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		N
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4		Y
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3	Brief explanation of how to use the site provided under 'About'	N
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Data layers grouped into sector themes (e.g. aggregates, oil and gas, defence, fishing, shipping and navigation, tourism, etc.)	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3	For many datasets, only name of dataset provided for others a fuller description is provided.	N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Zoom to layer	Desirable	2		Y
Zoom to marine plan area/national extent	Desirable	2		Y
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2	N/A	N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		Y
Choice of base map	Desirable	3	Choice of 10 basemaps.	Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1	Can open map at last view only	Y
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		Y
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		Y
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	Some tool tips only	Y
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3	But overview map obscures most of the map extent	Y
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.12 Marine Plan, Spain

Basic functionality	Yes		**Additional features**	3 x viewers at different scales: International, National, sub regional. Identify tool, order layers.
Base maps	No		**Layer categories**	International: Areas relevant at the international scale. National: National jurisdictions, sub-regional jurisdictions, coastal population, uses and activities, marine protected areas, coastal waters, biogeography and hydrology. Sub-regional: Jurisdictions, Marine ecosystems, Marine protected areas, uses and activities, Physical and ecological factors.
Overview map	No			
Link to source/metadata	No			
Contact/feedback	No			
Print function	No			


Marineplan
www.marineplan.es/en/nacional.html
Apps Settings Chrome Google Imported From IE EA Survey Open Dat UK Gov - Spatial Dat Scopay Login Netley Abbey Junior Ireland's Marine Atla Sign in to your acco
MARINE PLAN
MARITIME POLICY AND MARINE SPATIAL PLANNIG
National scale
Marine Plan
National scale
National jurisdictional structure
Sub-regional jurisdictional structure
Coastal population
Uses and activities
Marine Protected Areas
Coastal waters
Biogeography and hydrology
Legend
200 km
200 mi
-26.36865, 44.66309
1 : 13841995

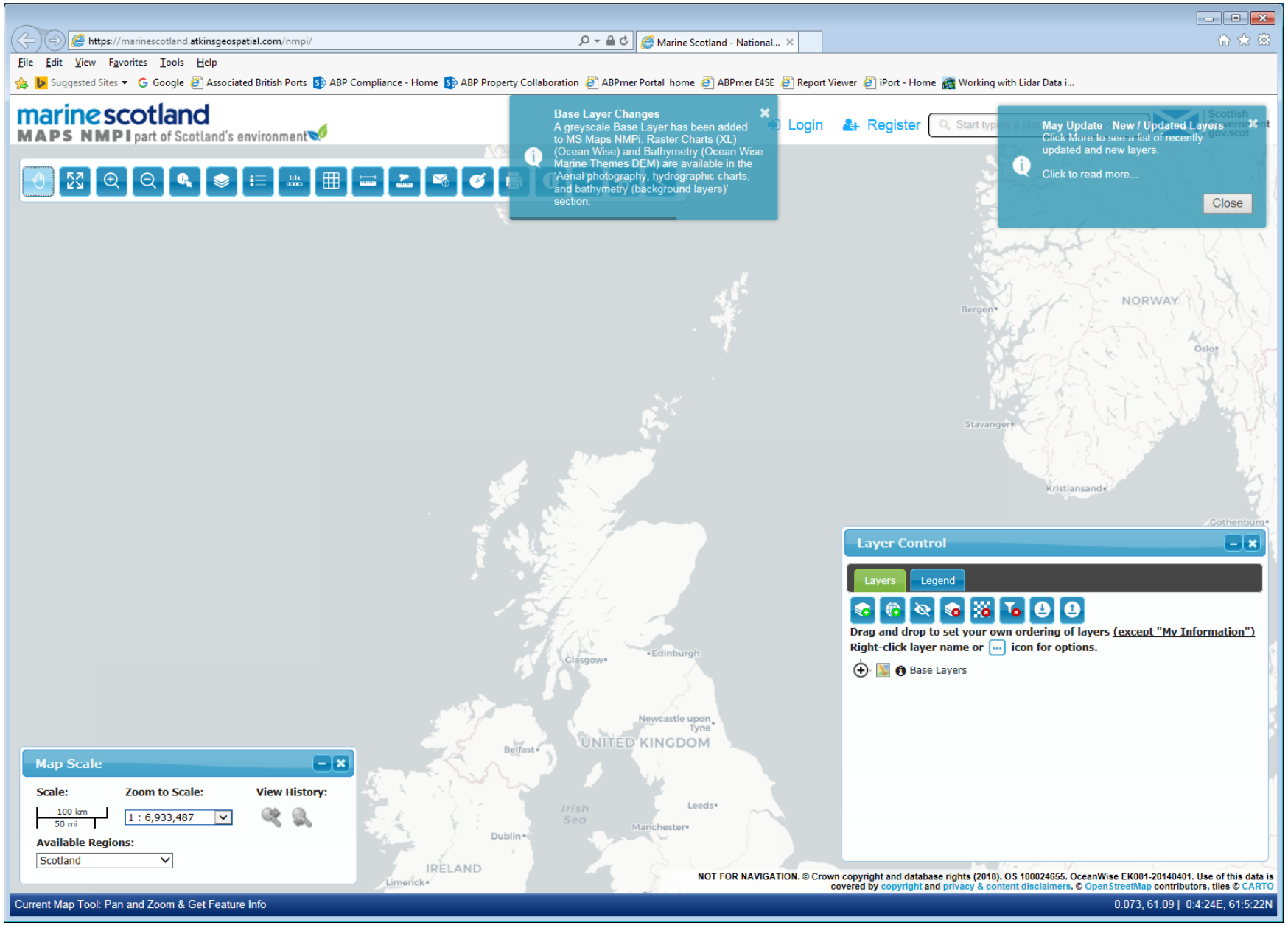
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		N
Data sources provided (where did it come from)	Expected	4		N
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3	Opens in Chrome but not Internet Explorer.	Y
Link to marine plan consultation website	Desirable	4		N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Top level categories include: ▪ National Jurisdictions ▪ Uses and activities ▪ Marine Protected Areas ▪ Biogeography and hydrology	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3	But only for a few features – many have no information.	Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2	Zoom to default wide map view.	Y
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4	Although querying is sometimes slow.	Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		N
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	For tool tips only.	Y
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		N
Access attribute table	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.13 Marine Scotland Maps NMPi

Basic functionality	Yes		**Additional features**	New/updated layers, Lat/Long graticule, line measure, Area measure, draw circle, extensive help section, free text search for location, information tool, layer opacity, layer order, add WMS layer. Ability to save/load map configuration. Data query function: Query feature based on field value (name etc.) Can constrain to current view extents. Can filter data based on field values and restrict to current view extents. Keyword search of data immediately highlights layers containing keyword. Spatial query of data via user drawn polygon. Can step through time series data via slider. User registration and login: Allows use of submitting information tools which allow the user to create and manage spatial information for the user's own use or submission to Marine Scotland.
Base maps	x 4: Positron - Tiles by CARTO, OpenStreetMap, OS Standard, OS licenced background colour.			
Overview map	No			
Link to source/metadata	Yes			
Contact/feedback	Yes			
Print function	Print to template, print area displayed on map		**Layer categories**	Assessments, Physical Characteristics, Clean and Safe, Healthy and Biologically Diverse, Productive, Climate Change, Administrative, Regions, National Marine Plan (2015), Aerial photography and hydrographic charts and bathymetry.


https://marinescotland.atkinsgeospatial.com/nmpi/
Marine Scotland - National...
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
marinescotland
MAPS NMPI part of Scotland's environment
Base Layer Changes
A greyscale Base Layer has been added to MS Maps NMPi. Raster Charts (XL) (Ocean Wise) and Bathymetry (Ocean Wise Marine Themes DEM) are available in the 'Aerial photography, hydrographic charts, and bathymetry (background layers)' section.
Login
Register
May Update - New / Updated Layers
Click More to see a list of recently updated and new layers.
Click to read more...
Close
NORWAY
Bergen
Oslo
Stavanger
Kristiansand
Gothenburg
Layer Control
Layers
Legend
Drag and drop to set your own ordering of layers (except "My Information")
Right-click layer name or ... icon for options.
Base Layers
Glasgow
Edinburgh
Newcastle upon Tyne
UNITED KINGDOM
Belfast
Irish Sea
Leeds
Manchester
Dublin
IRELAND
Limerick
Map Scale
Scale:
100 km
50 mi
Zoom to Scale:
1 : 6,933,487
View History:
Available Regions:
Scotland
NOT FOR NAVIGATION. © Crown copyright and database rights (2018). OS 100024655. OceanWise EK001-20140401. Use of this data is covered by copyright and privacy & content disclaimers. © OpenStreetMap contributors, tiles © CARTO
Current Map Tool: Pan and Zoom & Get Feature Info
0.073, 61.09 | 0:4:24E, 61:5:22N

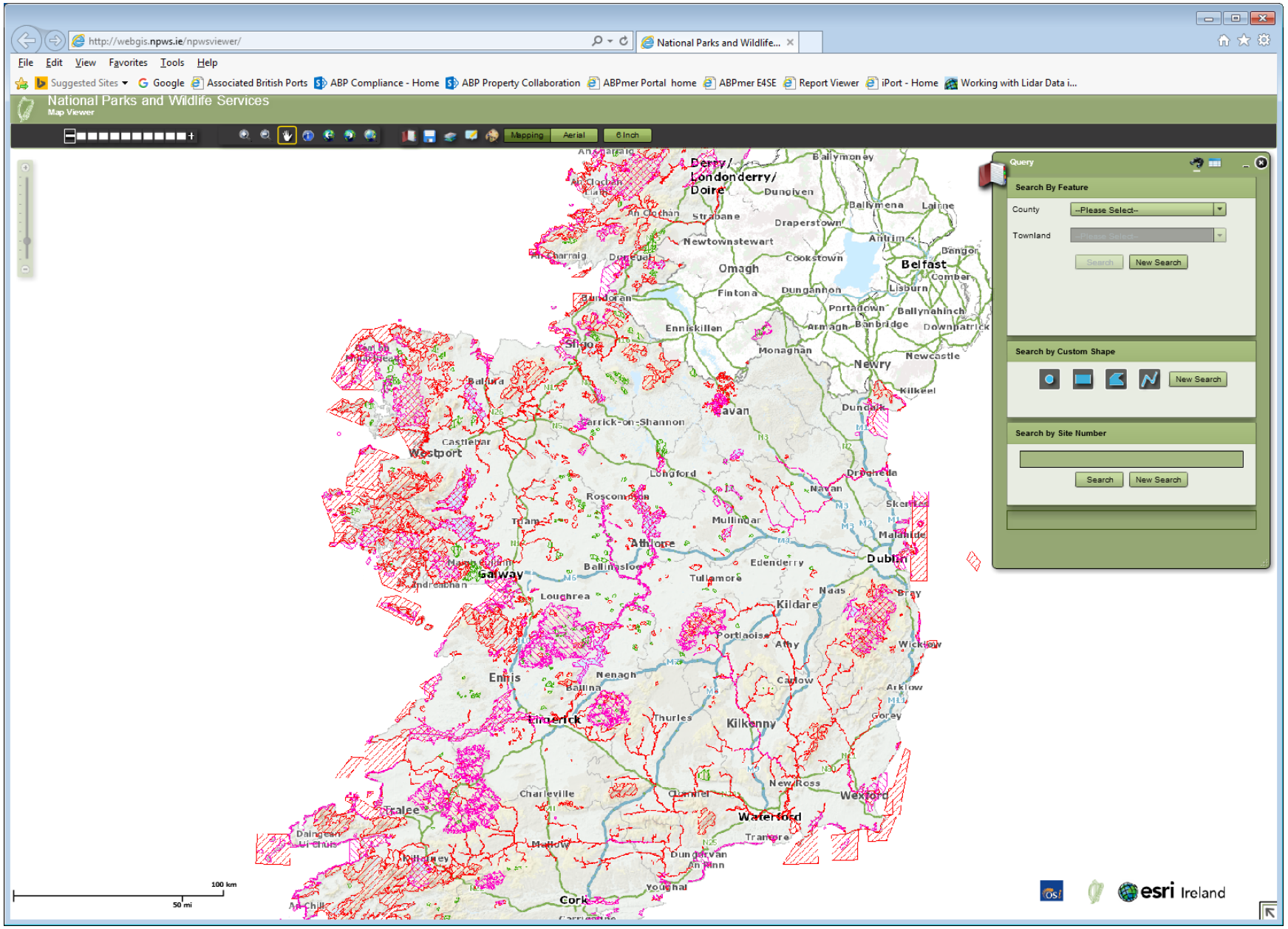
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4	New webpage opens when user clicks on 'NMPi Home' button in toolbar with details about the data portal and links to marine planning.	Y
Data sources provided (where did it come from)	Expected	4	Data source provided via link to metadata	Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4	Metadata available via link to data layer information	Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	Metadata states it is MEDIN standard	Y
Portal News page (changes, updates, future developments)	Desirable	2	Information provided about updates on start up.	Y
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	Not directly, but links via the 'NMPi Home' button in toolbar to marine planning.	Y
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4	'Submit Fault Report / Comment' button in toolbar.	Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3	'Help' button in toolbar.	Y
Last update date for site	Desirable	3	Version details via 'About' button in toolbar.	Y
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Data layers grouped in main themes: ▪ Physical Characteristics ▪ Clean and Safe ▪ Healthy and Biologically Diverse ▪ Productive ▪ Etc. With sub-categories under each of these.	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3	But information is displayed in new webpage, rather than as a window in the data portal.	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	3		Y
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		Y
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2	Zoom to initial map extent.	Y
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Only for some data layers.	Y
Can the data be downloaded free of charge?	Desirable	2	The data layers which are downloadable are free.	Y
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3	User can click on all layers within top theme or sub-categories.	Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2	'Add 3rd Party WMS Layer' button in layer control.	Y
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4	Can be slow if lots of layers added/removed from active list.	Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3	Positron, Open Street Map or OS	Y
Filter layers based on attributes	Desirable	2		Y
Bookmark function	Desirable	1		Y
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		Y
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		Y
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		Y
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3	Keyword search functionality (although not working when tested)	Y
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		N
Access attribute table	Desirable/ Advanced functionality	3		Y
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		Y
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		Y
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		Y
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		Y
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		Y
Feature to enable saving/loading of map configuration.	Advanced functionality	2		Y
Function to view time series data e.g. interactive slider	Advanced functionality	1	For time-aware layers (although not working when tested)	Y
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		Y
Links to story maps and case studies	Advanced functionality	2		N

A.14 National Parks and Wildlife Services Map Viewer

Basic functionality	Yes (No mouse coordinates)		**Additional features**	Zoom to feature, floating legend, query, layer list etc., Identify tool. Data query functions: Search By Feature (County, Townland), Search By Custom Shape (user defined), Search By Site Number. Draw tools: User can draw/edit graphics, text and include Area and Distance measurements.
Base maps	x3: Mapping (terrain, transport, conurbations), Aerial imagery, OS			
Overview map	Yes			
Link to source/metadata	No			
Contact/feedback	No			
Print function	No		**Layer categories**	1 Category of layers: Special Protection Areas, Proposed Natural Heritage Areas, Natural Heritage Areas, Special Areas of Conservation, Grid 10 K.


http://webgis.npws.ie/npwsviewer/
National Parks and Wildlife...
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
National Parks and Wildlife Services
Map Viewer
Mapping Aerial 6 Inch
Query
Search By Feature
County --Please Select--
Townland --Please Select--
Search New Search
Search by Custom Shape
New Search
Search by Site Number
Search New Search
Derry/ Londonderry/ Doire
Belfast
Omagh
Enniskillen
Sligo
Ballina
Castlebar
Westport
Longford
Athlone
Galway
Mullingar
Dublin
Kildare
Ennis
Limerick
Kilkenny
Waterford
Wexford
Tralee
Cork
100 km
50 mi
esri Ireland

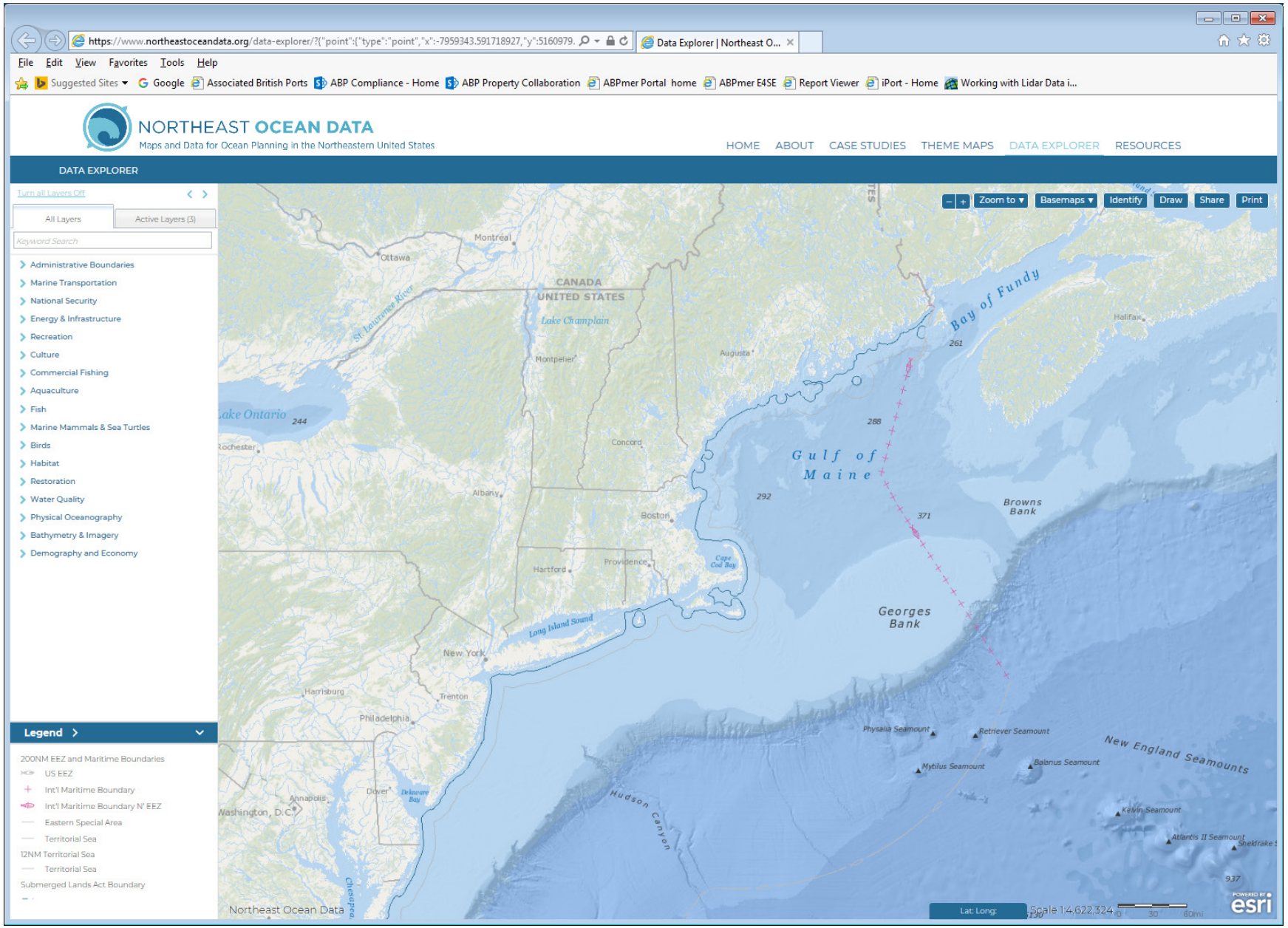
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		N
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		N
Coordinates display (e.g. Lat/ Long)	Desirable	3		N
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	n/a	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		N
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Only one theme	Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		N
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2	Zoom to full extent	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Via link to the National Parks and Wildlife Service	Y
Can the data be downloaded free of charge?	Desirable	2		Y
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3	Only one type of data	N
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		Y
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		N
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		Y
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		Y
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		Y
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.15 Northeast Ocean Data

Basic functionality	Yes	**Additional features**	Navigational chart as basemap, layer transparency, layer ordering (active layers), zoom to regions, zoom to layer, Identify tool, Draw tools including freehand polygon – allows sketching of polygon, share function (email, social media, direct link), floating table of contents/legend. Table of contents, legend, and active layers all in one tab. Free text search for data layers Informative non-technical layer summary (including explanatory diagrams, list of elements (e.g. species)). Option to view data layers based on themes (Marine life and habitat, Aquaculture, Commercial fishing, Cultural resources, Energy resources, Marine transportation, National security, Recreation, Restoration, Water quality,) Links to story maps and case studies. Links to Map tutorial, News and data updates, Media links, Technical background (of data portal).
Base maps	x5: Oceans, Satellite, Chart, Streets, National Geographic.		
Overview map	No		
Link to source/metadata	Yes		
Contact/feedback	Yes		
Print function	Print to template includes title, date, legend, scale bar, sources	**Layer categories**	Administrative boundaries, Marine transportation, National security, Energy and infrastructure, Recreation, Culture, Commercial fishing, Aquaculture, Fish, Marine mammals and Sea turtles, Birds, Habitat, Restoration, Water quality, Physical oceanography, Bathymetry and imagery, Demography and economy


https://www.northeastoceandata.org/data-explorer/?{"point":{"type":"point","x":-7959343.591718927,"y":5160979.
Data Explorer | Northeast O...
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
NORTHEAST OCEAN DATA
Maps and Data for Ocean Planning in the Northeastern United States
HOME ABOUT CASE STUDIES THEME MAPS DATA EXPLORER RESOURCES
DATA EXPLORER
Turn all Layers Off
All Layers
Active Layers (3)
Keyword Search
Administrative Boundaries
Marine Transportation
National Security
Energy & Infrastructure
Recreation
Culture
Commercial Fishing
Aquaculture
Fish
Marine Mammals & Sea Turtles
Birds
Habitat
Restoration
Water Quality
Physical Oceanography
Bathymetry & Imagery
Demography and Economy
Legend
200NM EEZ and Maritime Boundaries
US EEZ
Int'l Maritime Boundary
Int'l Maritime Boundary N' EEZ
Eastern Special Area
Territorial Sea
12NM Territorial Sea
Territorial Sea
Submerged Lands Act Boundary
Zoom to
Basemaps
Identify
Draw
Share
Print
Montreal
Ottawa
CANADA
UNITED STATES
Lake Champlain
St Lawrence River
Montpelier
Augusta
Bay of Fundy
Halifax
Lake Ontario
Rochester
Concord
Albany
Boston
Gulf of Maine
Browns Bank
Hartford
Providence
Cape Cod Bay
Long Island Sound
New York
Georges Bank
Harrisburg
Trenton
Philadelphia
Physalia Seamount
Retriever Seamount
New England Seamounts
Mytilus Seamount
Balanus Seamount
Hudson Canyon
Kevin Seamount
Atlantis II Seamount
Sheldrake
Annapolis
Washington, D.C.
Dover
Delaware Bay
Northeast Ocean Data
Lat: Long:
Scale 1:4,622,324
esri

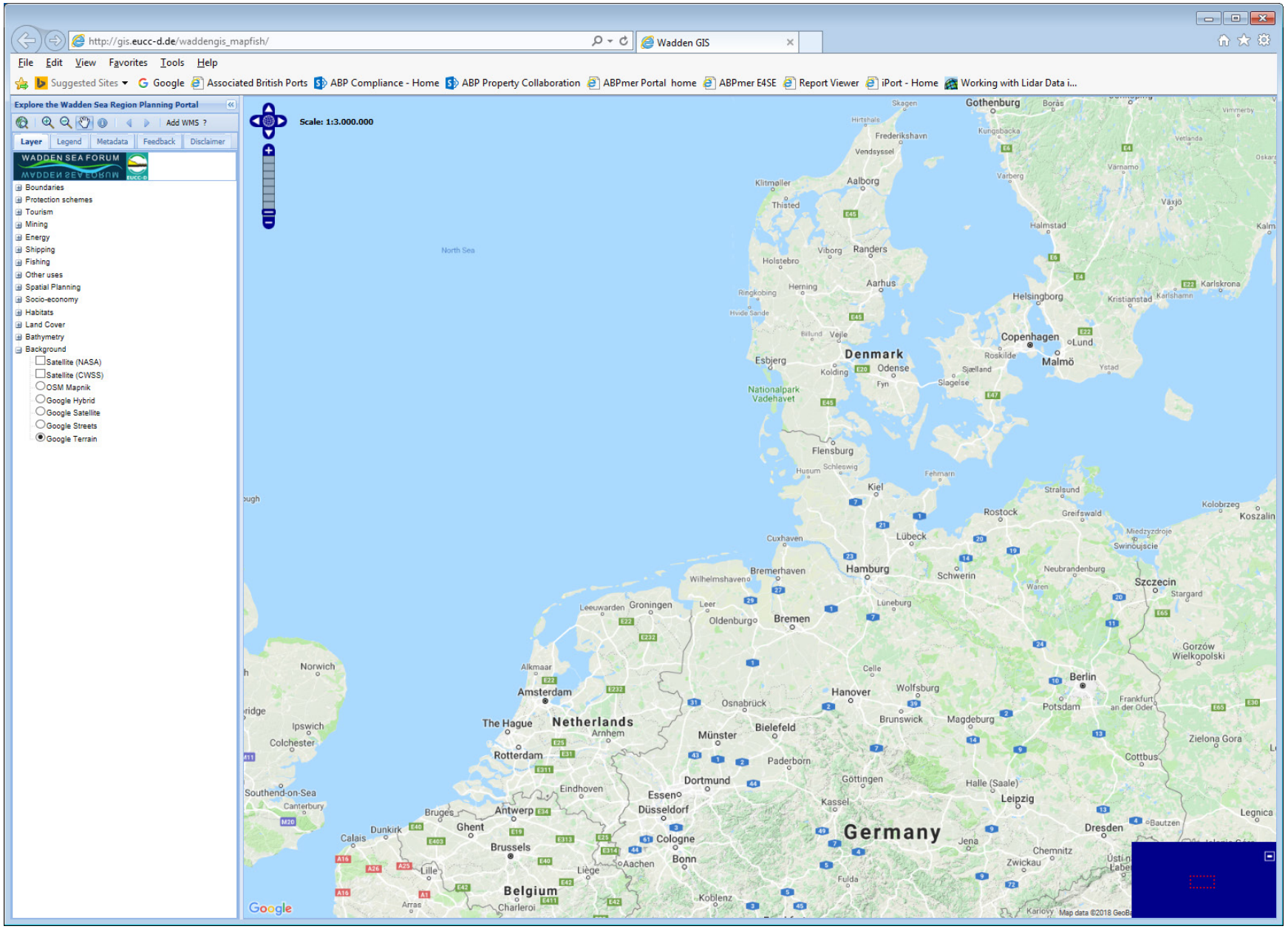
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4		Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4	Not for all layers.	Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	Metadata provided is in a report format.	N
Portal News page (changes, updates, future developments)	Desirable	2		Y
Coordinates display (e.g. Lat/ Long)	Desirable	3		Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	n/a	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4		N
Online guidance / help / FAQ / Tutorial for user	Desirable	3		Y
Last update date for site	Desirable	3		N
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		Y
Ordering of layers	Desirable	2		Y
Layer transparency	Desirable	2		Y
Display active layers only in separate table of contents	Desirable	2		Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Zoom to layer	Desirable	2		Y
Zoom to marine plan area/national extent	Desirable	2	Can zoom to different regions.	Y
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	Data hosted on the Northeast Ocean Data server or accessed through their ArcGIS rest endpoint. Some hosted externally but links provided to obtain data from these sites.	Y
Can the data be downloaded free of charge?	Desirable	2		Y
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4	Slow	N
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2	Can only zoom to a drop down list of place names	N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		Y
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3	Layer/legend tab covers up a lot of the map so hard to use.	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2	Collapsible but not moveable	Y
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		Y
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2	Can draw/edit graphics	Y
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		Y

A.16 Wadden Sea Forum

Basic functionality	Yes (No mouse coordinates)		**Additional features**	Information tool, Add WMS Layer, Basic help tab.
Base maps	x 7: Satellite (NASA), Satellite (CWSS), OpenStreetMap, Google: hybrid, satellite, streets, terrain.		**Layer categories**	Boundaries, Protection schemes, tourism, mining, energy, shipping, fishing, other uses, spatial planning, socio-economy, habitats, land cover, bathymetry, background.
Overview map	Yes			
Link to source/metadata	Yes			
Contact/feedback	Yes			
Print function	No			


http://gis.eucc-d.de/waddengis_mapfish/
Wadden GIS
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
Explore the Wadden Sea Region Planning Portal
Add WMS ?
Layer Legend Metadata Feedback Disclaimer
WADDEN SEA FORUM
Boundaries
Protection schemes
Tourism
Mining
Energy
Shipping
Fishing
Other uses
Spatial Planning
Socio-economy
Habitats
Land Cover
Bathymetry
Background
Satellite (NASA)
Satellite (CWSS)
OSM Mapnik
Google Hybrid
Google Satellite
Google Streets
Google Terrain
Scale: 1:3.000.000
North Sea
Denmark
Netherlands
Germany
Belgium
Gothenburg
Copenhagen
Malmö
Helsingborg
Aarhus
Aalborg
Esbjerg
Odense
Flensburg
Kiel
Rostock
Lübeck
Hamburg
Bremen
Oldenburg
Amsterdam
The Hague
Rotterdam
Arnhem
Groningen
Leeuwarden
Hanover
Berlin
Potsdam
Dortmund
Essen
Düsseldorf
Cologne
Bonn
Aachen
Brussels
Antwerp
Ghent
Bruges
Eindhoven
Münster
Bielefeld
Osnabrück
Paderborn
Kassel
Göttingen
Leipzig
Dresden
Magdeburg
Wolfsburg
Brunswick
Szczecin
Norwich
Ipswich
Colchester
Southend-on-Sea
Canterbury
Dunkirk
Calais
Lille
Liège
Koblenz
Google
Map data ©2018 GeoBasis-DE/BKG

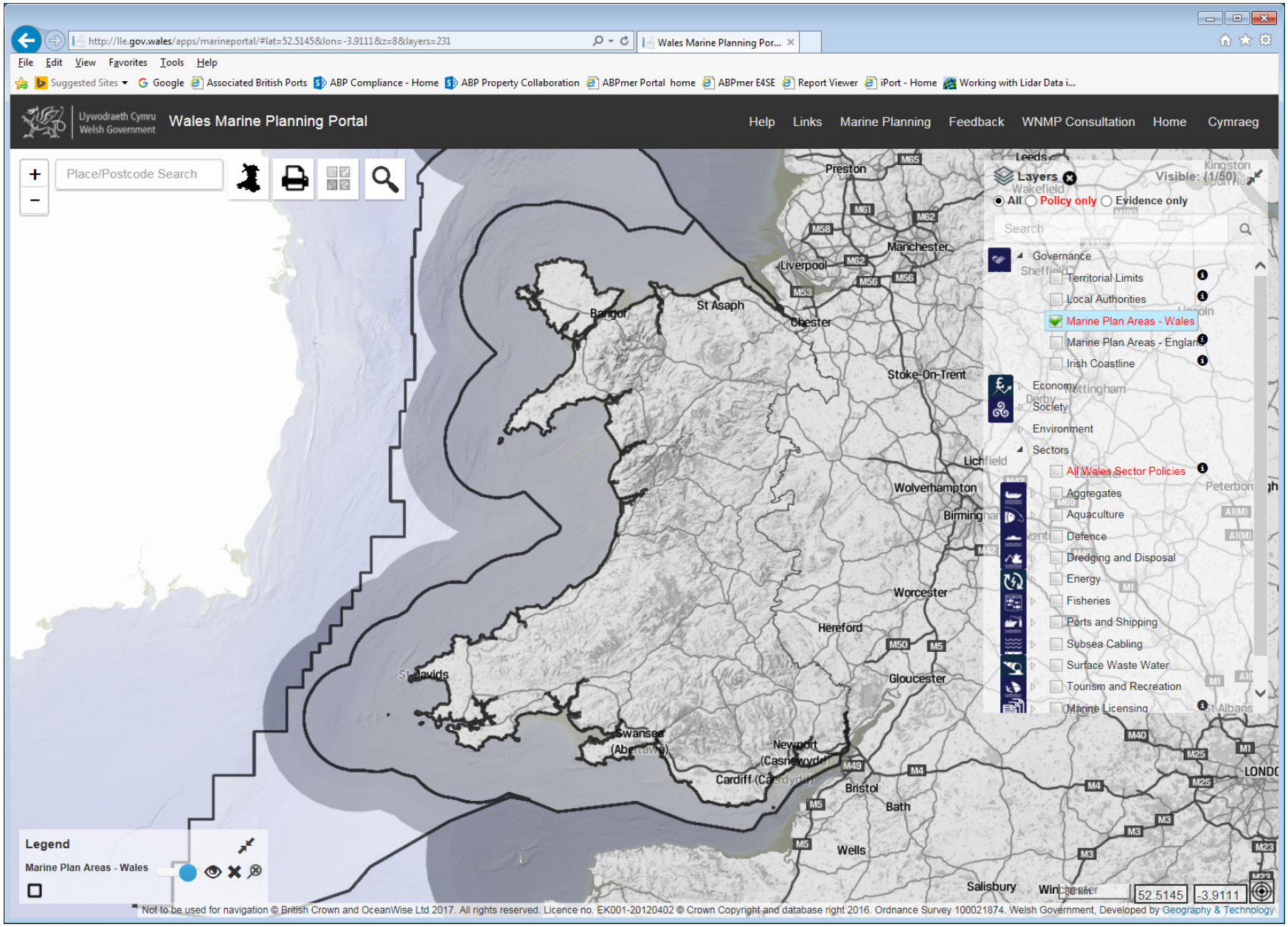
Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4		N
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4	General details about the site given in the Disclaimer but no background information on related topics	Y
Data sources provided (where did it come from)	Expected	4		Y
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4		Y
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4		N
Portal News page (changes, updates, future developments)	Desirable	2		Y
Coordinates display (e.g. Lat/ Long)	Desirable	3		N
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	n/a	N
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4	Email address given	Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3		N
Last update date for site	Desirable	3		Y
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4		Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4		Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4		Y
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3		N
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2		Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2		N
Zoom to marine plan area/national extent	Desirable	2	Zoom to full extent	Y
Deselect all active layers in data viewer	Desirable	2		N
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2		N
Can the data be downloaded free of charge?	Desirable	2		N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3		Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		Y
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4		Y
Scale bar	Expected	4	Scale stated but no scale bar.	N
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		Y
Choice of base map	Desirable	3		Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates, other)	Desirable	2		N
Measure Tool – line, area, height, depth, get coordinates	Desirable	3		N
Identify/query tool	Desirable	4		Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2		N
Free text search for data	Desirable	3		N
Keyword search of data to highlight layers containing keyword	Desirable	3		N
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3		N
Full screen map view	Desirable	1		N

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
Mobile device compatibility	Desirable	3		N
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2	Collapsible but not moveable.	Y
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3		N
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

A.17 Wales Marine Planning Portal

Basic functionality	Yes		**Additional features**	Free text search and suggestions for locations, Free text search for data/layers, Help section, Line measure, Area Measure. Layer transparency, hide layer, zoom to layer. Area layer search - define area using points and search for policies affecting this area.
Base maps	x 2: Marine DEM, Marine Bathymetry			
Overview map	No			
Link to source/metadata	Yes			
Contact/feedback	Yes			
Print function	Print to template		**Layer categories**	Option to display Policy data only, Evidence data only, or all data. Governance, Economy, Society, Environment, Sectors: Aggregates, Aquaculture, Defence, Dredging and disposal, Energy, Fisheries, Ports and shipping, Subsea cabling, Surface Waste Water, Tourism and Recreation, Marine Licensing, Miscellaneous.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Wales Marine Planning Por...
File Edit View Favorites Tools Help
Suggested Sites Google Associated British Ports ABP Compliance - Home ABP Property Collaboration ABPmer Portal home ABPmer E4SE Report Viewer iPort - Home Working with Lidar Data i...
Llywodraeth Cymru Welsh Government
Wales Marine Planning Portal
Help Links Marine Planning Feedback WNMP Consultation Home Cymraeg
Place/Postcode Search
Layers
Visible: (1/50)
All Policy only Evidence only
Search
Governance
Territorial Limits
Local Authorities
Marine Plan Areas - Wales
Marine Plan Areas - England
Irish Coastline
Economy
Society
Environment
Sectors
All Wales Sector Policies
Aggregates
Aquaculture
Defence
Dredging and Disposal
Energy
Fisheries
Ports and Shipping
Subsea Cabling
Surface Waste Water
Tourism and Recreation
Marine Licensing
Legend
Marine Plan Areas - Wales
Preston
Manchester
Liverpool
Chester
Bangor
St Asaph
Stoke-On-Trent
Wolverhampton
Worcester
Hereford
Gloucester
Swansea
Newport
Cardiff
Bristol
Bath
Wells
Salisbury
52.5145
-3.9111
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Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
1.1 WebGIS interface				
Tick box to agree to terms and conditions and disclaimer	Expected	4	Click 'Continue' rather than tick box.	Y
Site user-friendly and easy to understand – (Smooth, logical procedure for portal operation, navigation and use of map functions)	Expected	4		Y
Map Viewer large enough for use	Expected	4		Y
Layout is simple and quick to load	Expected	4		Y
General details about the site and background information on related topics	Expected	4	Pop-up window opens on loading with details of marine plan consultation and link to consultation website.	Y
Data sources provided (where did it come from)	Expected	4	Pop-up box states 'Metadata is not yet loaded for this data layer. Metadata will be added to the portal as it becomes available.'	N
Metadata available when querying the data layers (including hotlinks/ hyperlinks)	Expected	4	See above.	N
Are Metadata Standards used? (SPIRE, INSPIRE, UK GEMINI, ISO 19115)	Expected	4	See above.	N
Portal News page (changes, updates, future developments)	Desirable	2	Portal updates are listed on the start-up page.	Y
Coordinates display (e.g. Lat/ Long)	Desirable	3	Coordinates of map centre displayed.	Y
Site easy to find (via google or links through website)	Desirable	3		Y
Link to marine plan consultation website	Desirable	4	Link provided at start-up in pop-up window and link in portal menu.	Y
Facility for user to provide feedback (e.g. facility for feedback, support, forum, discussion - sharing and discussion of results online)?	Desirable	4	Link to feedback/ comments form in portal menu.	Y
Online guidance / help / FAQ / Tutorial for user	Desirable	3	Link to user guide in portal menu	Y
Last update date for site	Desirable	3	Version of portal displayed at start-up	Y
1.2 Data layers				
Displays Raster data (i.e. Aerial Photo)	Expected	4	Basemaps only	Y
Displays Vector data (Line, Point and Polygon)	Expected	4		Y
Layer Control with data layer selection for viewing and querying	Expected	4		Y
Display of 1+ layers simultaneously	Expected	4	Will display up to a limit of 50 data layers.	Y
Intuitive categorisation of data layers within table of contents (e.g. grouped into themes relevant for MSP).	Expected	4	Top level: ▪ Governance ▪ Economy ▪ Society ▪ Environment ▪ Sectors	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
			Sub-categories under these themes, e.g. Environment > Protected Areas – European > SAC	
Informative, non-technical data layer summary (with option to include explanatory diagrams of methodologies, links to reports, list of features (e.g. species) etc.).	Desirable	3	On clicking data layer in the map window, a pop-up window opens with summary information about the data layer(s) clicked	Y
Display of Data Layers at set spatial scales based on their extent	Desirable	2		N
Ordering of layers	Desirable	2		N
Layer transparency	Desirable	2	Opacity slider next to data layer in legend.	Y
Display active layers only in separate table of contents	Desirable	2		N
Zoom to layer	Desirable	2	Zoom to Layer button next to data layer in legend.	Y
Zoom to marine plan area/national extent	Desirable	2	Zoom to Wales extent button	Y
Deselect all active layers in data viewer	Desirable	2		Y
GIS Data download facility? (speed, size and format of data downloaded)?	Desirable	2	No download data functionality.	N
Can the data be downloaded free of charge?	Desirable	2	See above.	N
Functionality for the data user to add their own GIS data (formats e.g. Esri, Mapinfo, Other)	Desirable	3		N
Option to view data layers based on themes (preconfigured views/data layers based on a theme)	Desirable	3	All data layers within each sector theme (e.g. defence, energy, fisheries, ports and shipping, protected areas – national) can be viewed with one click.	Y
WMS loader – via user provided link and/or list of available WMS providers	Desirable/ Advanced functionality	2		N
1.3 Functionality				
Good portal performance – viewing, querying, refreshing	Expected	4		Y
Zoom and pan tools	Expected	4	Zoom using +- buttons and also zoom/pan using mouse controls.	Y
Scale bar	Expected	4		Y
Legend	Expected	4		Y
Suitable background data displayed	Expected	4		Y
Show/hide layers and legend	Desirable	1		Y
Overview map	Desirable	2		N
Choice of base map	Desirable	3	Marine DEM or Marine bathymetry contours.	Y
Filter layers based on attributes	Desirable	2		N
Bookmark function	Desirable	1		N
A range of options for navigation to site of interest (postcode, place name, grid reference, coordinates,	Desirable	2	Place/postcode search available (although did not appear to be working)	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
other)				
Measure Tool – line, area, height, depth, get coordinates	Desirable	3	Linear and area measurement tool only.	Y
Identify/query tool	Desirable	4	Via mouse click in map window.	Y
Swipe function, to easily compare data layers	Desirable	1		N
Information pop-up with mouse hover	Desirable	2	Only tools have pop-up information with mouse hover.	Y
Free text search for data	Desirable	3		Y
Keyword search of data to highlight layers containing keyword	Desirable	3		Y
Generate Layer Statistics	Desirable	2		N
Print to template from browser	Desirable	3	Map window with legend below can be printed off.	Y
Full screen map view	Desirable	1		N
Mobile device compatibility	Desirable	3		Y
Access attribute table	Desirable/ Advanced functionality	3		N
GIS Tools – e.g. spatial analysis tools	Desirable/ Advanced functionality	3		N
Filter/query data based on field value (e.g. name, date etc.) with option to constrain query to current view extents.	Desirable/ Advanced functionality	3		N
Combine layers, active layers, legend into one collapsible/moveable panel for clarity and ease-of-use.	Desirable/ Advanced functionality	2		N
Advanced attribute table functions (e.g. filter data by map extent, zoom to individual data entries, filter data using expression, clear and refresh selection, show/hide columns, export all data to csv.)	Advanced functionality	3		N
Floating/moveable table of contents, legend etc.	Advanced functionality	1		N
Geographical-based querying e.g. spatial query of data via user drawn graphic	Advanced functionality	2		N
Option to share map – via generated URL, email, social media	Advanced functionality	3		N
Show GPS location – track user location	Advanced functionality	3		N
Facility for data input / upload? (adding user data)	Advanced functionality	3		N
Ability to create, add, edit plans	Advanced functionality	3		N
Graphics tools – draw and edit graphics, add labels and text, save and upload graphics text file.	Advanced functionality	2		N
Export maps to downloadable images	Advanced functionality	3		N
Area layer search - define area using points and search for data/policies in defined area.	Advanced functionality	3	User can draw an area and search for policies within the area although this did not appear to be	Y

Feature	Feature Priority	Relevance to MSP 1 (Low Priority) 4 (High Priority)	Notes / General Comments	Feature Present in Data Viewer (Y/N)
			working).	
Feature to enable saving/loading of map configuration.	Advanced functionality	2		N
Function to view time series data e.g. interactive slider	Advanced functionality	1		N
User registration and login to allow user to allow the user to create and manage spatial information for the user's own use or submission.	Advanced functionality	2		N
Links to story maps and case studies	Advanced functionality	2		N

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