SEA WEBGIS & REPORTING TOOL

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Executive Summary

The Environmental Protection Agency has developed a new GIS tool to make environmental assessments easier. It is a reporting tool that provides quick & easy access to environmental data via maps & tables. Environmental reports can be created for both small & large scale interest areas.

Although originally developed for the Strategic Environmental Assessment (SEA) Unit, it is not limited to this purpose. It is a multi-purpose environmental reporting tool that can be used for site assessments, catchment analysis, site visits & much more.

What is SEA?

The SEA Directive promotes, during planning stages, both a high level of environmental protection & sustainable development. SEA is applicable to 11 sectors & requires environmental assessments for plans likely to have a significant effect on the environment. Sectors requiring SEA include county planning, transport, water management, forestry etc.

So why was this tool need?

Well when producing development plans at a local, regional and national scale SEA requires a screening of all potential environmental impacts. This helps determine if further environmental impact assessment is required. Under SEA the EPA is a statutory body that must be consulted. With access to the new GIS reporting tool the SEA Unit & external planning authorities can do quick environmental assessment reports.

How to access?

At the moment the SEA WebGIS & Reporting Tool is only available to public authority organisations via the EPA's Portal for Environmental Data Exchange Network (EDEN) (www.edenireland.ie). However with the success of this project the EPA is looking to build similar tools for the public.

How it works?

In addition to being a WebGIS with extensive environmental data the application has a simple workflow for users to get custom reports on areas of interest:

1. Zoom to area of interest (e.g. a town);
2. Define or select area of interest;
3. Provide plan details & area buffer;
4. Run & download environmental report.

This report is structured to highlight the key environmental information for SEA. It can be run in just 2 minutes & provides the following information in maps & tables:

- Latest water quality & related pressures
- Nearby conservation areas
- Flood risks
- Groundwater vulnerability
- Geology & aquifer details
- Landcover types
- Radon levels

For more information contact gis@epa.ie

Objectives

The aim of the SEA WebGIS & Reporting Tool were:

- Producing a WebGIS application that links all environmental data across sectors (e.g. Water, Industry, Conservation, Flood Protection etc.)
- Make planning authorities self-sufficiency during the SEA environmental data screening process
- Added value to stakeholders of the EPA's SEA Unit
- Develop a more consistent approach to environmental assessment
- Increase the capacity of the SEA Team within the EPA to work on value added activities instead of manually producing these reports in response to queries
- Use in other EPA business areas like site assessments & catchment analysis

Solution

In response to the SEA business requirement the Informatics Team within the EPA initiated a development project in October 2014. The development concentrated on two elements, firstly the development of a WebGIS application with the integration of extensive user functionality and environmental data from across the public sector, the second development task was a detailed environmental report tool.

To implement the solution a functional specification was developed based on the business requirements. This identified the tools and data required within the application, the workflow

to generating the environmental report, and finally the design of maps and tabular data for this report. In terms of data there was a requirement to use and combine both internal and external environmental data. For data from external organizations consent of use was requested and approved with up to date data provided

The development of the WebGIS application was built using Silverlight 5 technology with the mapping in the application achieved with the ESRI Silverlight API. The map services are provided through ArcGIS Server 10.2.2 while WCF web services are used to access custom EPA find and search tools. The reporting tool was developed using SQL Server Reporting Services. This technology standard is the current development framework within the EPA for more advanced WebGIS applications.

The SEA WebGIS & Reporting Tool was completed and released to public authorities via the EPA's Environmental Data Exchange Network (EDEN) in January 2015. EDEN is a portal for hosting public sector applications and data exchange between public sector organisations.

The completed application includes both a large suite of functionality and data as follows. In terms of functionality as would be expected the application includes all the standard functionality of zoom, pan, select, measure etc. but in addition to this has some custom tools like map tips, zoom to o-ordinates, print, add graphic, town search, address search, data download and the reporting tool for defining an area of interest. In addition to EPA data on water quality, Water Framework Directive, licensed industry and landuse the application also includes the following external data:

- Base map data from the Ordnance Survey of Ireland
- Conservation data from National Parks & Wildlife Service
- Geology Data from the Geological Survey of Ireland
- Flood Mapping from the Office of Public Works

Within the application there is a simple workflow for users to get a custom report on their area of interest:

1. Zoom to area of interest (e.g. a town);
2. Define or select area of interest;
3. Provide plan details & area buffer;
4. Run & download environmental report.

This report is structured to highlight the key environmental information for SEA screening. It can be run in just 2 minutes & provides the following information in maps & tables:

- Latest water quality & related pressures
- Nearby conservation areas
- Flood risks
- Groundwater vulnerability
- Geology & aquifer details
- Landcover types
- Radon levels

The application is proving very successful with a large user base and evidence that it is being used for tasks unrelated to SEA. It has been of great benefit to the SEA Team allowing them to concentrate on value added activities. The EPA is now considering similar reporting tools for public facing applications.

Benefits

The aim of the application was that it allowed SEA practitioners to do self-sufficient in screening for potential environmental impacts from development plan. It was very successful to this end and has seen the release of EPA resources to carry out value added activities in SEA assessments and consultation. It allows the SEA Team to be more proactive and target instead the promotion and engagement of sustainable SEA practices. The return on investment is very much around the savings in time and resources.

An added benefit is that the tool has been identified as excellent for carrying out quick assessments for EPA licensed sites or for monitoring teams when doing surveys. The EPA has also used it to quickly respond to public queries or in response to Access to Environmental Information (AEI) requests. The estimated saving on time per report is 2 hours per query.

The success of this tool has resulted in the EPA planning similar tools on public facing WebGIS Applications.

This SEA WebGIS &Reporting Tools is one of the first externally available applications that aims to host and report on data both internal and external to the hosting organization. We have worked with the data owners and ensured an appropriate update procedures are in place and provide acknowledgment of this data in the output reports.