Public Participation GIS aids waterfront regeneration, Torry and Nigg Bay, Scotland - UK

1. Policy Objective & Theme

- ADAPTATION TO RISK: Managing impacts of climate change and safeguarding resilience of coasts/coastal systems
- SUSTAINABLE USE OF RESOURCES: Preserving coastal environment (its functioning and integrity) to share space

2. Key Approaches

- Participation
- Knowledge-based
- Technical

3. Experiences that can be exchanged

A role for Public Participation GIS in the involvement in an important community (regeneration) waterfront project.

4. Overview of the case

The South Aberdeen Coastal Regeneration Project (SACRP) is a joint one-year environmental scoping project using Public Participation GIS to involve all members of the community in the project.

5. Context and Objectives

a) Context

The Torry and Nigg Bay lies to the east of Aberdeen in Scotland. It was a once vibrant and attractive coastal resort area of Aberdeen, and now including a Site of Special Scientific Interest (SSSI) and a local surfing spot. However, through increasing neglect over time and change of use the area has suffered severe environmental degradation; the area has a badly polluted burn (stream), polluted air from the local water/sewage treatment plant; a beach that is now a dumping ground; and an unattractive coastal landscape with poor scenic vistas for the local community and tourists.

The city council are seeking to develop a proposal for the regeneration of the waterfront area of Torry and Nigg Bay through the South Aberdeen Coastal Regeneration Project (SACRP). The regeneration project will ultimately be carried out in several phases. The first phase is the scoping project which seeks to examine a number of different scenarios for regenerating the area. These include the location of a new boat ramp or slipway and a coastal resource centre to develop the water activity sports amenities of Nigg Bay for educational purposes; a combined artificial reef and breakwater to protect the boat ramp, create a diving reef, and to increase marine biodiversity in the area; introduction of dune ridges at the back of the current beach; landscaping of the area using trees to hide the sewage treatment plant buildings; and a reedbed/wetland area to treat the polluted burn and to improve the aesthetics of the visual landscape and the habitat/biodiversity of the area. The impact of climate change on the area is one of the key factors in the regeneration scenarios.

b) Objectives

A major element of the regeneration project aims to explore the role of the geospatial technologies e.g. Geographical Information Systems (GIS), remote sensing, mobile data collection (GPS and GIS) and the Internet, to provide novel

approaches to public participation in waterfront regeneration, optimal site selection of developments using techniques of spatial analysis, the creation of environmental databases, and a coastal atlas resource for the area.

6. Implementation of the ICZM Approach (i.e. management, tools, resources)

a) Management

Aberdeen City Council has responsibility for the regeneration scheme and is working with the Aberdeen Institute for Coastal Science and Management at the University of Aberdeen to conduct the scoping study.

b) ICZM tools

The regeneration work will be carried out in several stages following an environmental clean-up. This work will involve collaboration with local businesses e.g. the oil and gas industry, environmental agencies and bodies e.g. Scottish Natural Heritage, Scottish Environment Protection Agency , the East Grampian Coastal Partnership , the Crown Estate, and coastal ecologists and educators.

The second phase of the project will be to develop the reed-bed and wetland area. The third phase will be to develop the boat ramp, coastal resource centre, and artificial reef. The final phase will be to ensure the completion of the regeneration work and to ensure its sustainability in the future.

Effective and sustainable regeneration of an area requires community involvement and participation. To this end SACRP sought to embrace the local community from the outset by hosting a number of practical workshops that explore the potential for local input e.g. local knowledge, expertise, and experience knowledge into the proposals. They were carried out between September 2008 and September 2009. The workshops have been targeted at different age groups ranging from secondary school pupils, to residents and local councillors. Public Participation GIS (PPGIS) has successfully been used as a way to actively involve communities in every aspect of a regeneration project from the data collection stage, to the analysis, presentation and communication of information to the wider community. Geo-spatial data collected from a number of different sources e.g. Ordnance Survey and SeaZone (both through the Edina Marine Digimap educational licence agreement), Scottish Natural Heritage, the Macaulay Institute, Aberdeen Harbour Board, and the Eurosion project about various different aspects of the coastal environment, were stored in a GIS database and accessed using ESRI's ArcExplorer, ArcView and ArcGIS software for display, analysis and mapping. Simple Virtual Reality (VR) techniques using Google Earth were used to visualise the different proposals and to explore the different possible locational and development scenarios. Hands-on workshops with these geo-spatial tools allowed the participants to explore and select the important spatial datasets, to identify optimal locations for features of the proposal e.g. boat ramp and coastal resource centre, to 'plant' screening for the sewage treatment plant, and with the aid of a 1m resolution Digital Terrain Model of the area to consider the optimum location for the proposed reed-bed and wetland area taking into account the topographic characteristics. Fly-throughs of the waterfront area using Google Earth provided an effective way to provide insight into the characteristics of the area and to engage the public in the choice of siting locations. VR was also used to develop a virtual walk along the coastal footpath focusing on exploring the local geology. Future developments will include the use of 3D Landscape Design and Visualisation software such as the World Construction Set to provide more realistic representations of the environment. More advanced VR solutions have been developed with the aid of the Macaulay Institute's Landscape Visualisation Theatre suite which is designed to provide an environment in which workshop participants can interactively locate features in the landscape and then evaluate the proposed solution by voting with handsets. The coastal atlas will be based around the GIS customised to provide an online educational and tourist resource for the area.

7. Cost and resources

The budget for the scoping study was ca. £80,000. The regeneration of the wetland area has been estimated at £900,000.

8. Effectiveness (i.e. were the foreseen goals/objectives of the work reached?)

The project has demonstrated a practical and innovative approach to waterfront regeneration and development using and

range of geospatial technologies. It has given the opportunity to work with raw data rather than pre-processed data and information.

9. Success and Fail factors

The participants selected - school pupils (14-15), parents and local councillors all had an interest in community regeneration.

Lack of interest and resistance to change of some participants could be problematic in this approach.

10. Unforeseen outcomes

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12. Verified by

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13. Sources

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