



Marine Reference Information for Developing Coastal Atlases - UK Experience

by

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Drivers

- Environment
 - Marine Policy Objectives & Spatial Planning
 - Environment & Fisheries Protection
 - Habitat Mapping & Assessment
- Economic Development
 - Renewables Site Selection & Development
 - Minerals Exploitation
 - Shipping /Activity & Vessel Tracking
- Risk Assessment & Mitigation
 - Flooding & Coastal Inundation
 - Emergency Response Planning & Operations
 - Defence & Civil Security



All require access to fit for purpose marine data and information

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Technology

In addition, GIS is becoming established in the marine sector as an important and powerful tool

Allowing easy access and analysis of geographic information for marine activities and applications

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User Requirements

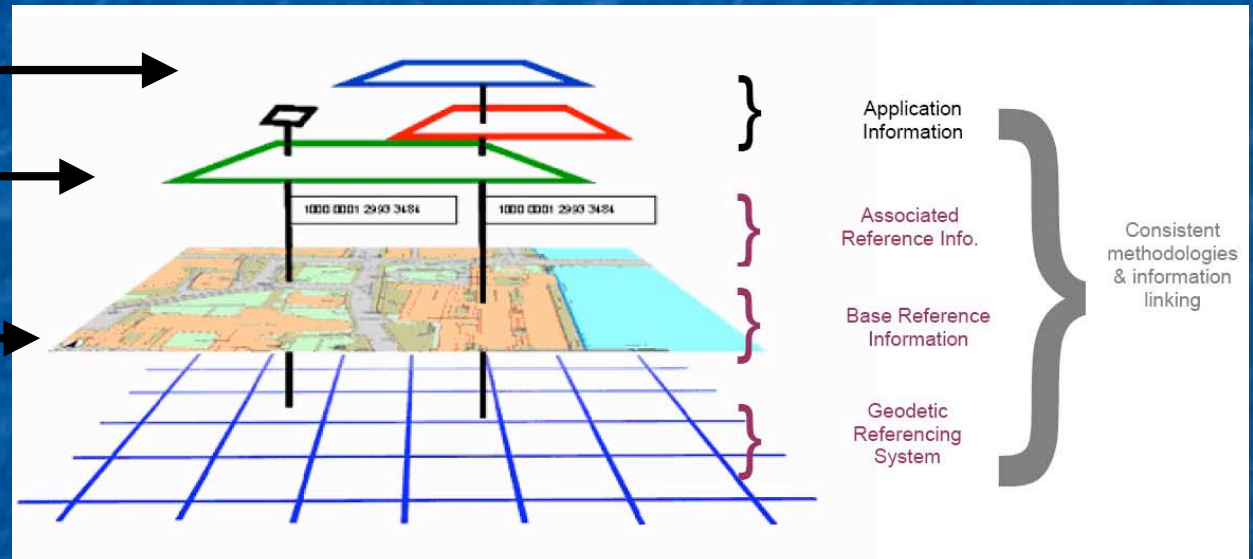
- Authoritative and comprehensive
- Maintained, current and updated
- Metadata to appropriate standard
- National datasets to be created to same technical standards and quality
- Accessible for use in GIS and Web GIS
- Comply with industry best practice
- Consistent licensing terms
- Provide a foundation for Marine SDI




Hierarchical Framework for SDI Creation

Associated Reference Information e.g. Historical Shipwrecks

Marine Application Data e.g. Ecosystem Management



Base Reference Information based on multiple 'best available' sources e.g. CHP, DHP, CCO etc



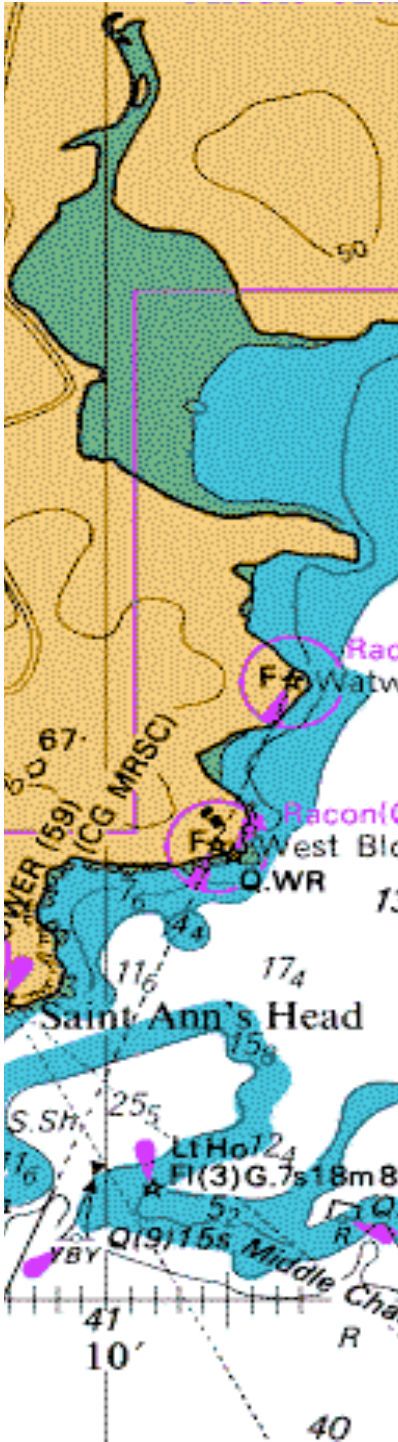
Can traditional sources of marine data meet these needs?

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Traditional Sources of Marine Data

Nautical charting:

- Designed solely for navigators
- Charts individually compiled - varying scale level and inconsistent content
- Depicts abstract safety bias view of real-world
- Contains generalisations and conservative depths (known as 'shoal bias')
- No interoperability with other datasets
- Electronic charting suitable for display only



Traditional Sources of Marine Data

Project Specific Data Collection:

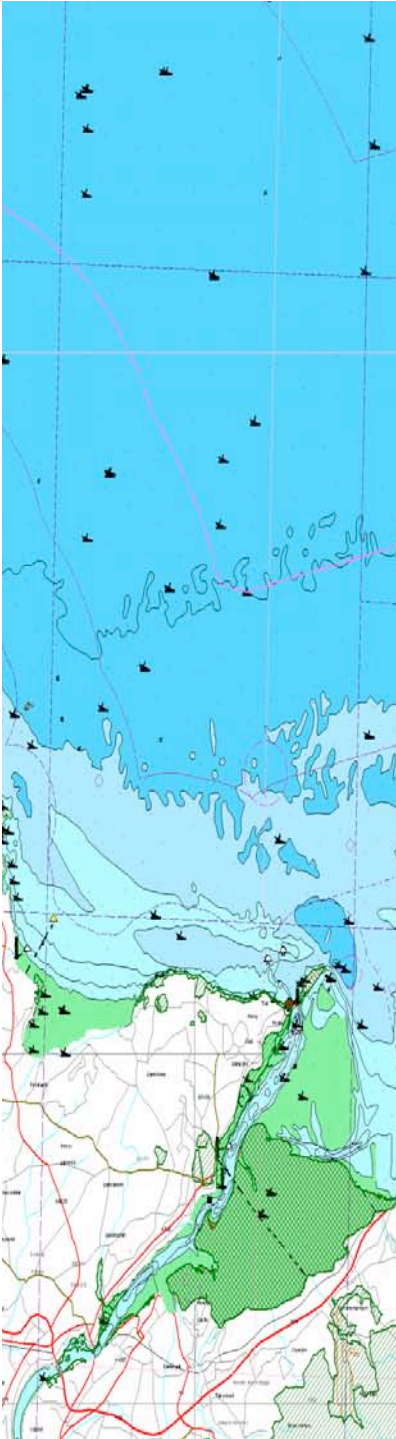
- Single purpose (e.g. coastal protection)
- Often no reference to existing datasets
- Limited area and data types
- Leads to replication of effort
- Results in inconsistent data 'silos'
- Does not meet wider user requirements
- If done right, project data can support and improve overall reference information framework (input to SDI)



So what is needed?

A coherent and coordinated approach to marine data acquisition, management and service provision supporting a wide range of activities and application

Comprehensive and authoritative digital marine reference data comparable to land mapping



SeaZone Response

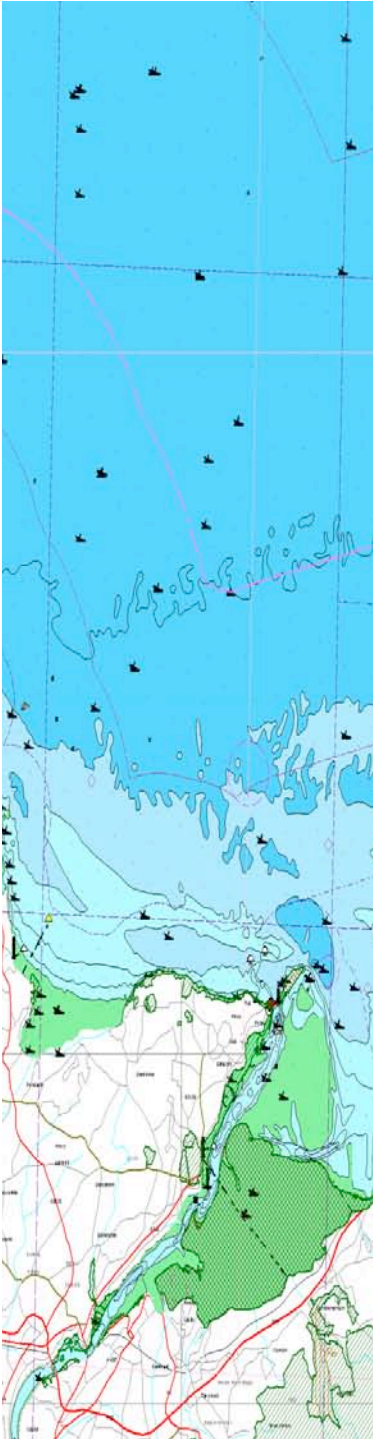
- Government owned company reporting to the UK Hydrographic Office
- Established to meet the needs of the wider marine community
- Funded by customers - sustainable
- Combination of marine applications, spatial data and GIS expertise
- Themed approach to data management & improvement to support all uses of data
- Collaboration with other data providers e.g. BGS Seabed Geology

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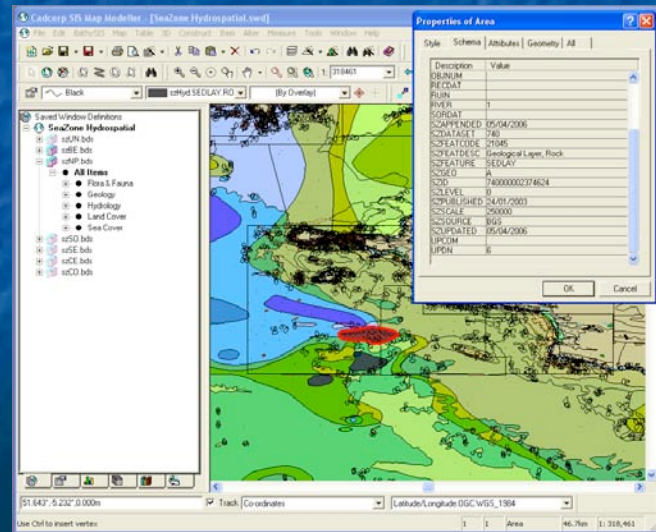
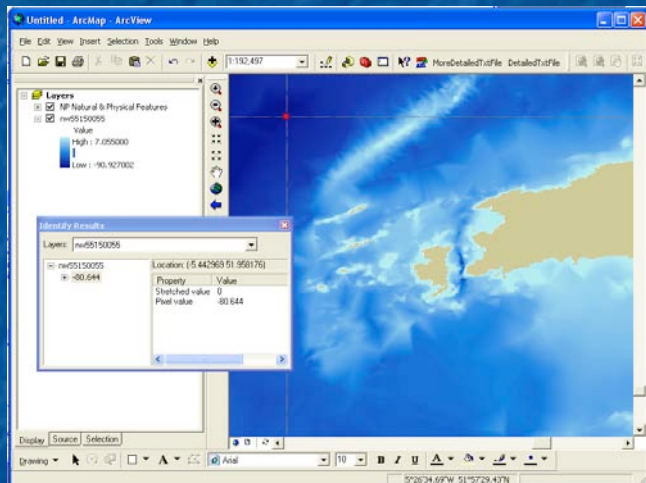


SeaZone Hydrospatial

- First true authoritative digital marine map of its kind worldwide
- Based on re-engineered source data from HO's and other national agencies
- Includes marine themes from INSPIRE
- Established user base across public and private sectors in UK and overseas
- Suitable to a wide range of applications
- Growing overseas geographic coverage
- Committed to meeting existing and future marine data needs including Marine SDIs



SeaZone Hydrospatial Topic Layers

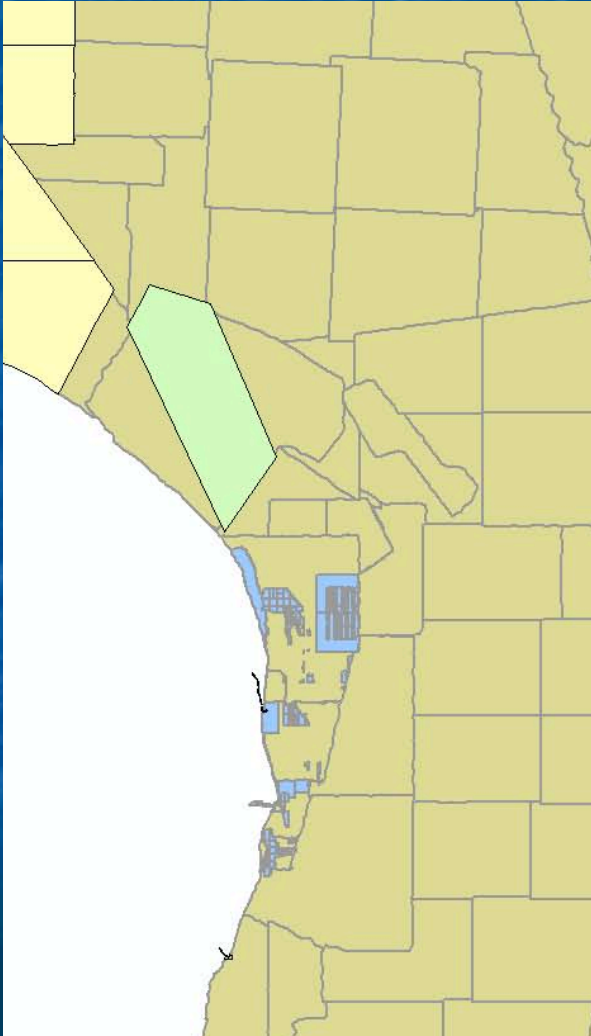


Provided in 6 Topic Layers:

- Bathymetry & Elevation
- Natural & Physical Features
- Structures & Obstructions
- Socio-Economic & Marine Use
- Conservation & Environment
- Climate & Oceanography

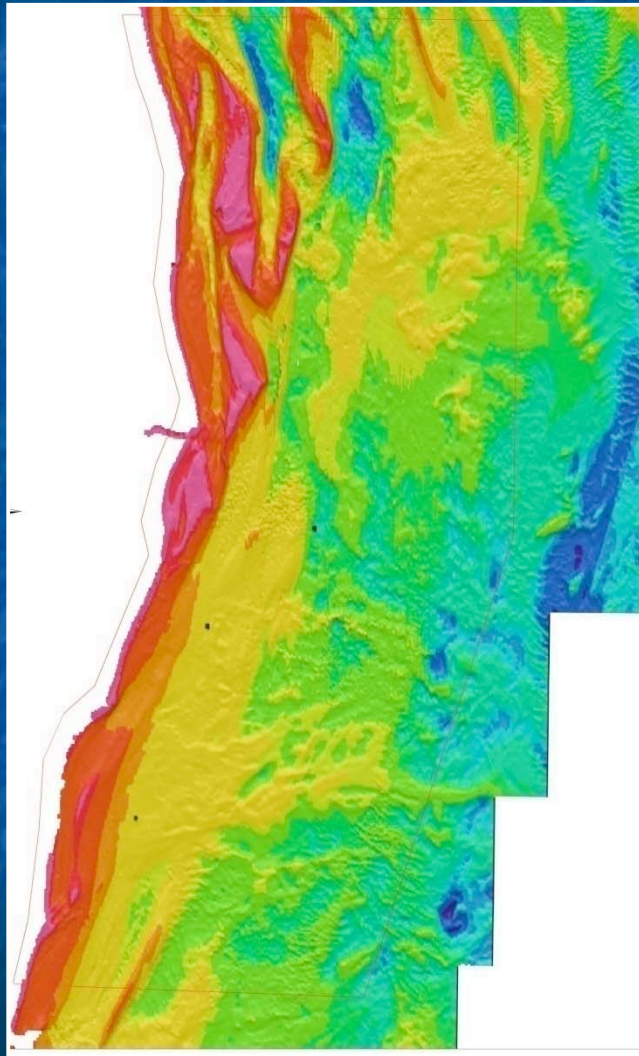
Complies with existing & emerging standards for base reference information & provides an ideal framework for 'project based' datasets

Survey Bathymetry Modelling



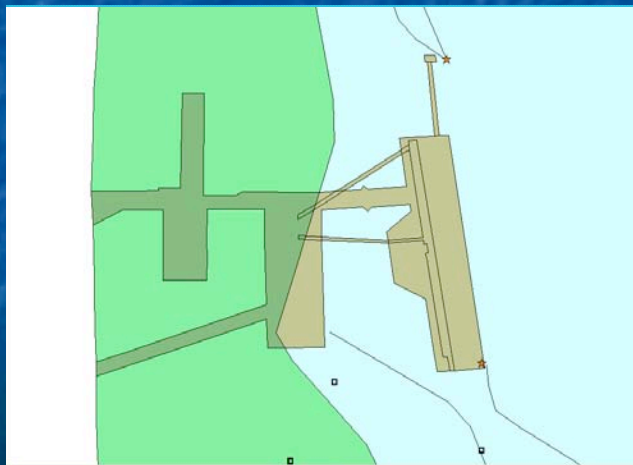
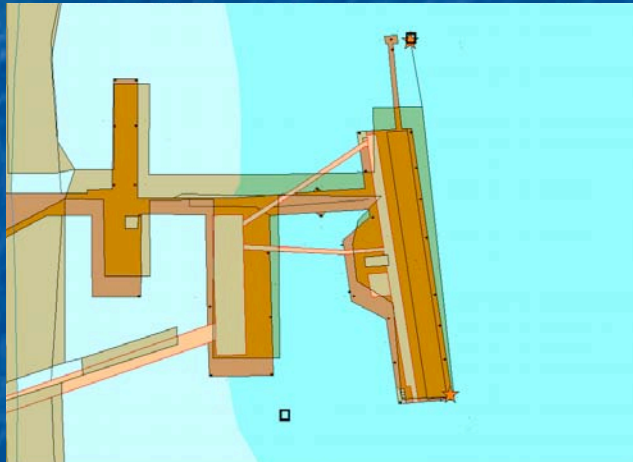
- SeaZone has databased and processed digital survey data from UKHO and other providers (FHOs, Port Authorities etc)
- Existing paper survey sheets (yellow) are captured to maximise existing data holdings
- Creating accurate metadata for use by customers, MEDIN portal and support de-confliction
- Data supports new surface bathymetry model (to be part of SZ Hydrospatial), Sea Bed Geology and habitat assessment

Survey Bathymetry Modelling



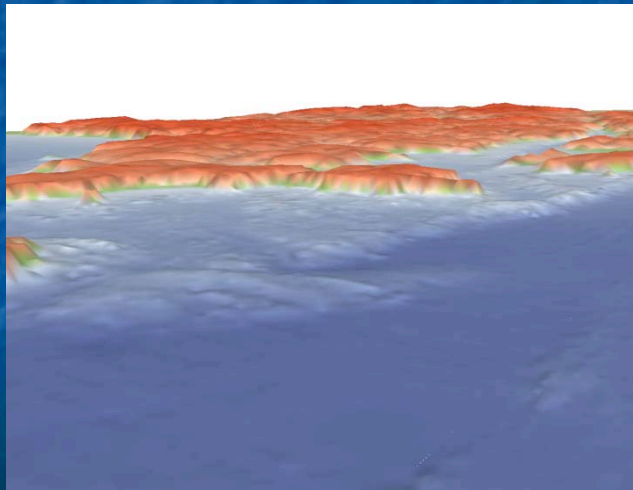
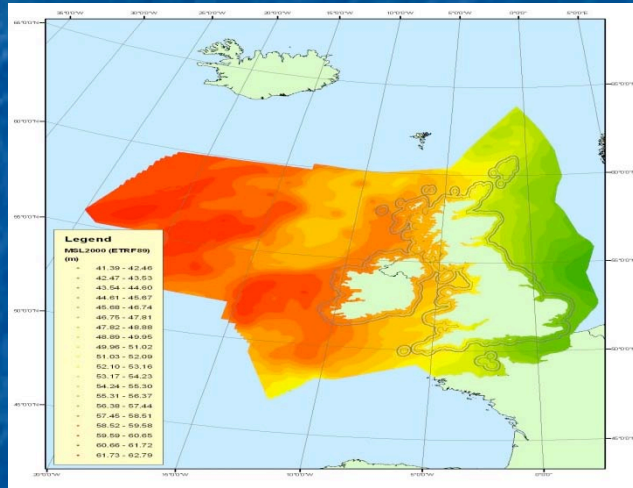
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Land - Sea Topographic Integration



- SeaZone's Coastal Mapping Improvement Programme commenced January 2007
- Harmonising SeaZone Hydrospatial with Ordnance Survey Master Topography Layer
- Addresses differences in UK Hydrographic Office and Ordnance Survey source data
- Follows on from ICZMap pilot project
- Dataset for Thames Estuary delivered to customer. Roll out for GB planned 2008/9
- British Geological Survey is adopting the same approach to create an interoperable coastal and seabed geology

Land - Sea Height Integration



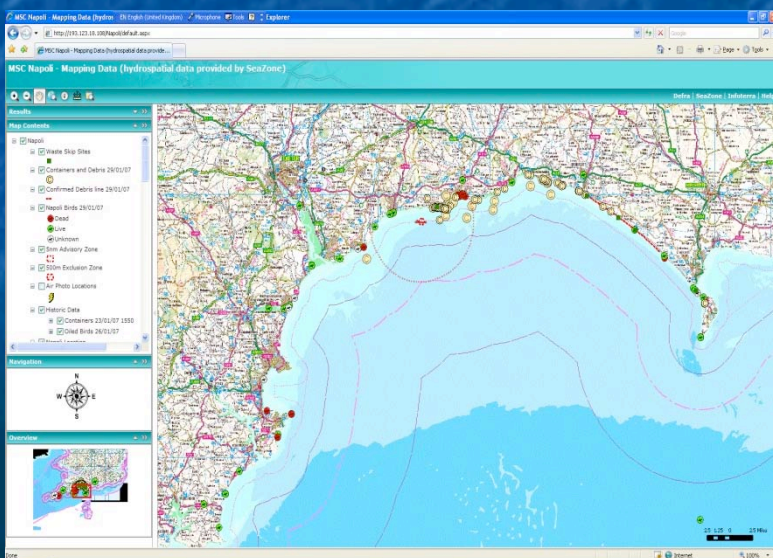
- Height component of SeaZone's Coastal Mapping Improvement Programme
- Aiming to create land-sea integrated height surface
- SeaZone new high resolution seabed terrain model using source (survey) data
- UKHO's Vertical Offshore Reference Frame used to address datum differences between land and marine datasets
- OS and SeaZone developing new methods to create and improve surface across coastal inter-tidal areas

Other Ongoing Improvements

- UKHO / 3rd Party Feature De-confliction
- Unique IDs and Feature Association (DNF)
- Sea Area Improvement
- Marine Gazetteer
- Metadata for Source Data (e.g. surveys)
- ISO Compliant Feature Catalogue
- GML Application Schema
- Web Services Delivery

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Use Case - UK Government

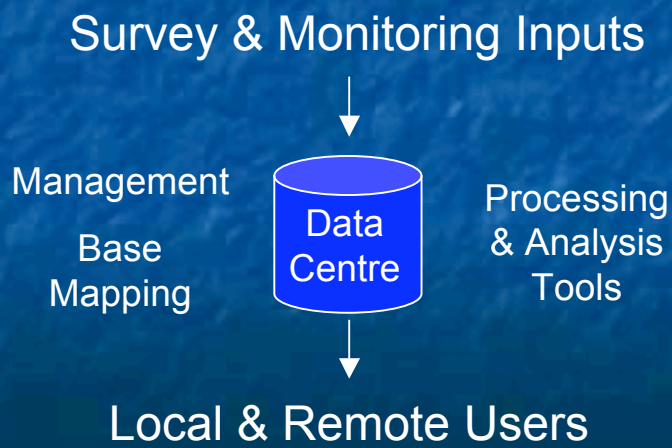


- SeaZone Hydrospatial loaded onto Defra spatial database
- Defra internal staff and executive agencies via WMS and data download
- Available to general public via MAGIC website and map server
- High profile during Napoli incident with Dorset & Devon County Councils as users

Use Case - British Energy



- Data Management & Dissemination System
- Supports building of four new nuclear power stations
- Comprises:
 - data management plan
 - land & marine reference information
 - environmental monitoring data
 - engineering datasets
 - metadata creation & discovery tools
- Example of technical best practice
- Output via Desktop GIS and Web Services



Summary

- Numerous drivers for better access to marine data and information
- Users are demanding authoritative, comprehensive, maintained marine reference information comparable to land mapping
- SeaZone Hydrospatial has proven itself as a model digital marine map with 350 users across public & private sectors
- Provides foundation for Marine SDI and development of Coastal Atlases

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