Liverpool City Region's Coastal Designated Sites Evidence Strategy Workshop

Workshop Session 1: Evidence baseline and issues - where are we now?

SUMMARY

The aim of this workshop session was to determine which forms of evidence are currently being collected by which organisations, to identify key gaps in our evidence base and to propose opportunities for filling these gaps.

The main evidence gaps were identified as follows:

Biological (habitats & species): Information on mobile species eg migratory fish and eels, birds and cetaceans and how they use the coastal waters and estuary (e.g. nursery grounds for fish, bird feeding areas; availability of prey resources); knowing the location and use of functionally-linked land; habitat quality – not just extent; and understanding cause and effect.

Water Quality: Ecological status of water bodies; upstream and diffuse pollution; links between groundwater and the estuary; impacts of contaminated land / historical contamination; understanding of the impact of changes in water quality on habitats and species; knowledge of non-surveillance water bodies eg the Mersey.

Sediments and coastal processes: Historical contaminated sediment (extent, source and pathways); response time for habitats and species to show effects of historical pollution; understanding the impacts of dredging on historical contaminants in sediment; quantifying sediment movement from offshore; linkages between sediments / coastal processes and fisheries; success of dune restoration projects; impacts of climate change.

Human activities and impacts: Understanding shifting baselines eg bird populations; impact of land management on bird species; evidence to show whether agri-environment schemes are effective; success of mitigation schemes for developments; impacts of other activities / new developments on fisheries resources; understanding thresholds and cumulative impacts; recreational disturbance and use; understanding physical modifications and impacts on water quality.

Solutions for filling these gaps included: the use of citizen science, volunteer networks and partnerships (eg catchment partnerships); directed research in collaboration with universities; using evidence collected by industry and sea users (eg ports or anecdotal information from fishermen); making better use of mobile technology; making more of the local records centres (using them more and encouraging others to use them and submit data); the creation of a 'pressure map' to identify all human activities taking place in the area; and the addition of a condition into consents / licences to ensure that success of mitigation is monitored and results are submitted.

Some key points raised were that a lot of evidence is being collected by the different organisations but we need to ensure that this is fit for purpose. We need to be better at sharing evidence across different sectors and a big gap is actually in the collation and synthesis of all of these data to understand what they mean.

ANNEX 1

Key Points:

- It's not clear what's required and what it means:

  - It's not clear what the key issues are for the LCR coastal areas: have these been synthesised somewhere?
  - It might be that the data are all there but it's the synthesis of these data that is missing.
  - A big gap is an overview and meaning of all of the data – there are lots of data out there but no one is looking at what they are showing us and the implications of this.
  - Need some more joined-up studies to collate all of the different datasets
  - Local Record Centres are key in terms of collating data and public engagement / communication

- Evidence needs to be 'fit for purpose':

  - The time-scales for some evidence / projects can be much shorter than for others – how long do data remain valid for?
  - Some datasets can be 40-50 years out of date
  - A lot of historical data may not be valid for evidence base for a new development
  - In some cases it can be difficult to determine whether the evidence supplied by developers is fit for purpose.
  - Keeping evidence up to date is the most crucial thing especially for habitats (as it needs to be more standardised).

- Sharing evidence:

  - Private sector can be reluctant to share raw data; consultancies often don't share GI data – these data could be used for other purposes
  - Could ask developers to share data as part of their Licence requirements
  - But need to be careful if data are collected for a specific purpose and then used to answer other questions; risks of data being misused and therefore need to be caveats associated with the data.
  - Highlights importance of good metadata
  - Evidence that is shared needs to be used responsibly.
  - Commercial sensitivities need to be taken into account

- Volunteer networks / Citizen science

  - Everyone uses WeBS data – there needs to be more support/collaboration for WeBS
  - Other examples of citizen science: 'River Guardians' on the lower Mersey; Rivers Trust nationally are collecting water quality data via worldwide scheme 'Freshwater Watch'; use of volunteers on the Sefton Coast to help support unpopular management decisions.
  - Need to be aware of bias when using volunteers – studies need to be robust

- Feedback is very important when volunteers are used: how are the data collected by the volunteers being used? What does it show?

- Learn from others

  - The LCR isn't unique: need to keep an eye on other similar regions eg Clyde and Severn – can we learn from them?

BIOLOGICAL (HABITATS & SPECIES)		WATER QUALITY		SEDIMENTS & COASTAL PROCESSES		HUMAN ACTIVITIES & IMPACTS	
What drives your evidence requirements?							
Habitats & Birds Directives: understanding condition of SPA/SAC features: current status and trends		Water Framework Directive (WFD)		New developments		New developments / planning applications – determining impact	
Wildlife & Countryside Act: understanding condition of SSSI features		Environmental Quality Standards Directive (EQSD)		Shoreline Management Plan		Fisheries management	
Water Framework Directive (WFD): understanding ecological status of water bodies		Bathing Waters Directive		Coastal defence work		Understanding impacts of human activities	
Monitoring compliance		Shellfish Waters Directive		Academic research / education		Improving management actions	
Identifying and monitoring local wildlife sites; monitoring change; supporting designations		Monitoring compliance				Data can be used for strategic document formulation eg local plans / ecological networks	
Sharing data across the board		Academic research / education				Academic research / education	
Collection of data to support conservation							
Academic research / education							
What evidence is currently collected?							
Mersey Docks & Harbour Company	Ecological surveys (project specific) New Brighton walkover surveys (sediment/habitat)	Mersey Docks & Harbour Company	Suspended sediments (site/project specific)	Mersey Docks & Harbour Company	Local sediment quality Coastal processes: local & strategic Bathymetry:	Merseyside BioBank	Data on proposed developments

					local & strategic		
Environment Agency	WFD Biological Elements: • Phytoplankton • Chlorophyll • Cell counts • Macroalgae • Marine angiosperms (saltmarsh, seagrass) • Benthic invertebrates • Imposex • Estuarine fish • INNS Phase 1 habitat survey, plus more detailed for large schemes	Environment Agency	Water samples from permitted site discharges, watercourses, lakes, reservoirs, sea and groundwater. WFD Physio-chemical Elements: • Dissolved oxygen • Nitrates EQSD: • Organic/inorganic chemicals • Heavy metals • Sediments • Mussels Bathing Waters: • Microbiology Bioaccumulation (fish) Emerging substances Groundwater: qualitative and quantitative data	Environment Agency	Flood coast risk management: • Hydro-morphology • Geological processes • Sediment processes • Bathymetry	Environment Agency	Permitted sites discharges Bathing Waters

Natural England	Condition monitoring of SSSI units	Rivers Trust	Pond / river surveys help with water quality monitoring	Natural England	Collate information on sediment processes	Natural England	NNR Management records
	Condition assessment of MPAs				Contamination levels in sediment in Dee Estuary SAC		Consents / assents / advice on planning applications
	Annual monitoring of natterjack toads				Grab sampling of marine sediment (Particle Size Analysis)		One-off reports: recreational disturbance to birds eg study of recreational bird disturbance in Mersey Narrows and North Wirral Foreshore SSSIs
	Research on rabbit population management						
	Distribution, population size and trends of waterbirds; breeding seabird numbers; movement patterns of lesser black-backed gulls						Data / literature review of impacting activities in liaison with stakeholders
	Vegetation surveys at Ainsdale Sand Dunes NNR						
	Sand dunes and ground water at Ainsdale Sand Dunes NNR						
	Species distribution (birds, insects, plants,						

	fungi, moths, vascular plants) at Ainsdale sand Dunes NNR						
	Long-term monitoring (vegetation, weather, soil, air quality, birds, butterflies) at Ainsdale Sand Dunes NNR						
	Use of functionally-linked land by SPA bids						
	Biotope mapping for intertidal and some subtidal habitats eg intertidal sediment and faunal communities						
	Saltmarsh surveys for estuaries						
MEAS	In the past, have commissioned NVC and Phase 1 surveys Ecological surveys for planning			Wildlife Trusts	Biological recording to inform monitoring of coastal defences	University of Liverpool	Irish Sea Maritime Forum: • Stakeholder perspectives on Irish Sea • Development interests in

	applications Some commissioned bird surveys on SPA/Ramsar sites All data forwarded to Merseyside BioBank						Irish Sea One-off studies / research project data looking at LCR coastal/marine area in Celtic Seas / European Seas context; emphasis on human activities: 1 study looked at potential future trends in human use
Merseyside BioBank	Biodiversity information; held locally or accessed via the NBN. Includes: general species data; university research; site-based surveys etc; habitats (phase 1/NVC/priority habitats)			Sefton Council / Coastal Monitoring Programme	Topographic LiDAR Bathymetry Aerial photography (vertical / oblique) Waves and currents Sediment characteristics	NWIFCA	Fisheries information: • Landings data (some) • Species caught • Location • Gear used
NWIFCA	Cockle and mussel survey			Liverpool Hope	Depends on the research	MEAS	Habitats Regulation

	data *Sabellaria* monitoring			University	project / teaching activity		Assessments
Sefton Council / Coastal Monitoring Programme	Habitat mapping Scheme-specific biological data			NWIFCA	Anecdotal information from fishermen about changes in marine/coastal areas eg erosion	Liverpool Hope University	Depends on the research project / teaching activity
WeBS	Bird species and numbers each month						
Liverpool Hope University	Depends on the research project / teaching activity						

What are the main evidence gaps?

Information on mobile species eg migratory fish and eels, birds and cetaceans Use of estuary by fish species (nursery, feeding grounds etc) Bird feeding areas Knowing the location and use of functionally-linked land The relationship and availability of prey/food resources Habitat quality – not just extent	Ecological status of water bodies in order to understand the impacts of development / day to day compliance. Gaps in knowledge in non-surveillance water bodies eg the Mersey Upstream and diffuse pollution Links between groundwater and the estuary Impacts of contaminated land / historical contamination and	Historic contamination extent, source and pathway. Need to know more about historical contaminated sediment in order to achieve 2020 target of cleanest waterbody for Mersey. Relationship between contaminated sediment and biology ie response time for habitats and species to show effects of historical pollution. Understanding impacts of dredging on historical	Impact of land management eg crop rotation on bird species and information to investigate impacts Evidence to show whether agri-environment schemes are effective (on sites that aren't farms) Success of mitigation schemes for developments Understanding physical modifications and impacts on water quality.

Understanding cause and effect	understanding the scale of this Understanding of impact of changes in water quality on habitats and species.	contaminants in sediment. Quantifying sediment movement from offshore. Impacts of climate change Linkages between sediments /coastal processes and fisheries Success of dune restoration projects	Cumulative impacts – understanding what else is going on (including outside of the direct development area) and when enough is enough; including temporal cumulative effects Understanding thresholds; how much pressure can be exerted? Impacts of other activities / new developments on fisheries resources Is there a gap in understanding impacts of sheep and cattle grazing on coastal habitats in terms of nutrient input? Not considered an issue – Liverpool Hope University have assessed impacts of dog faeces Recreational disturbance and use: lack of large-scale data to understand changes in recreational use over time; impacts of new users (especially individuals) Too many different human impacts to make accurate predictions Understanding shifting baselines eg bird populations
What are the opportunities for filling these gaps?			
Citizen Science to fill gaps eg	Could use the public to help	Directed academic research eg	Compilation of all plans/projects

anglers reporting on migratory fish/eels or sailors for invasive species – facilitated through local record centres to identify gaps and coordinate filling them Could we be more pro-active in encouraging local people to collect and submit data when they're out on the coast eg through fixed point photography? Are there more opportunities for using volunteers to collect data (eg there's a project within NBN looking at better engagement with anglers)? Could make better use of mobile technology to support volunteers collecting data. Local Records Centres are a one-stop-shop – use them and encourage others to use them and to submit data	monitor water quality or use volunteers to collect water samples for water quality or identifying diffuse pollution Directed research in collaboration with universities eg PhDs (but note that research needs to be innovative and of international significance) Catchment Partnerships to fill gaps in understanding of diffuse pollution and water quality/	understanding link between contaminated land and sources and links between locations. NE to extend contaminated sediment monitoring to other areas working with EA. Use evidence gathered by ports Collate anecdotal information from sea users eg fishermen Dune rejuvenation and sustainable management on NNRs	that are subject to HRA (MEAS did start to do this; Merseyside BioBank logs all commercial requests for data; NE show all consultations on WebMap; MMO show all Marine Licence applications on GI map) – need to bring all of this information together from the different Regulators and create a Pressure Map. Volunteers / citizen science Volunteers can provide anecdotal information on human activities – need to collect this better Add a condition into consents / licences to ensure that success of mitigation is monitored and results are submitted