



2nd Severn Estuary Forum

Thursday 7th June 2007

Walton Park Hotel, Clevedon

Working Together: The Future of the Severn Estuary

*A conference to discuss issues affecting the future of the
Severn Estuary*

Forum Report



The Severn Estuary Partnership is funded by a wide range of local authorities and statutory agencies, which are not all shown here. The organisations above have provided additional funding to support the Severn Estuary Forum.

About the Severn Estuary Forum

The **Strategy for the Severn Estuary** (2001) identified the need for an annual Severn Estuary Forum. This is the 2nd Forum Conference for the Severn Estuary, hosted by the Severn Estuary Partnership.

The **Severn Estuary Forum** brings together people from all interests to work together for the sustainable future of the Severn Estuary. Representatives from government, industry and Severn Estuary communities are invited to discuss common interests.

This year's theme for the Forum is **Working Together: the Future of the Severn Estuary**. The Forum will provide a platform for the exchange of information and debate. The discussion and recommendations from the Forum will guide the future work of the Severn Estuary Partnership.

Participation in the Forum allows you to:

- share information and discuss the regional and local implications of current issues;
- meet new people with similar interests who share a concern for the Severn Estuary;
- meet people with different perspectives who share an interest in the Severn Estuary;
- learn something new about the Severn Estuary and the people who manage and use its resources.

We have worked towards providing a lively day of informative talks, interactive debate and an opportunity for informal exchange with neighbouring people & organisations. We believe that exchanging information and informal networking helps us to work together towards sustainability.

With a wide range of services and project capabilities, the **Severn Estuary Partnership** works all year round to encourage people to communicate and collaborate in the management, use and development of the Estuary.



Severn Estuary Partnership

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*Working together
for the future of
our Estuary*

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Opening

Chair: Simon Haslett, Bath Spa University

Simon welcomed everyone to the Forum and introduced himself from Bath Spa University, a specialist in coastal science. After commenting on it being a full house and outlining the programme, he raised the following points:

- Today's attendance highlights the importance of today to communicate issues among the SEP and further afield.
- This is the second SEP forum moving on from last year's event and the Severn Wonders Festival – a series of around 40 events that spanned activity in the Estuary. The Forum was held at the end of the Festival. It was a well attended event and stimulated much discussion among the community.
- Around 400 people attended last year with 300 taking the trip on the 'Waverley'

Simon introduced the first speaker, George Ashworth, the Chair of the SEP Management Group.



George Ashworth Severn Estuary Partnership Management Group Chairman

George Ashworth, Monmouthshire County Council, has chaired the SEP Management Group for several years. The Management Group oversees the day-to-day running of the Partnership.

George explained what the Partnership is doing in terms of coordinating activities and the need for these services, for example in relation to important issues like dredging, the proposed barrage and tidal power for the entire estuary. There is huge interest as sea level rise is such an issue at present. He expressed pleasure in seeing the large attendance today and wished to congratulate Natasha Barker for the organisation and management of the day.



Natasha Barker, Severn Estuary Partnership Officer Working Together through the Severn Estuary Partnership & Forum

Natasha Barker is the Severn Estuary Partnership Officer based at Cardiff University in Wales. Her role involves leading a small team of Severn Estuary Partnership staff; project, service & budget management, business planning, annual reporting and promoting integrated coastal management. She trained as a Geographer specialising in coastal management and has worked as an environmental consultant on a wide variety of projects within and outside the UK. Since 1998 Natasha has been an Estuary Officer, with the Teign Estuary Partnership and Exe Estuary Partnership in south Devon before moving to the Severn Estuary Partnership in 2005.



Natasha provided background to the Severn Estuary Forum and the role of the Severn Estuary Partnership. An update on the work of the Partnership was presented, supported by copies of the Annual Report & Action Plan 2007-08 available at the Forum.

She highlighted:

- that a key priority for SEP is to encourage people to work together and support people in their work towards achieving sustainable development;
- communication is essential as everyone has their own interests.
- the Forum is an opportunity to reflect on the interests of the Severn and the role of the Partnership.

Using the partnership's 'wheel' of interests diagram, she indicated that:

- archaeology and cultural heritage of the area underpins interest, management is paramount.
- the natural heritage of the area must be protected and managed.
- there is a huge range of species and protected habitats including a potential SAC.
- planning and the impact of climate change are vital to the management of the Estuary.
- flood risk management is vital, advice must be taken and the pressures on low-lying land must be approached.
- climate change is a big issue – it will impact the mechanisms behind the Severn.
- energy is a big issue from nuclear to tidal and wind. Issues include the windfarms at Avonmouth, tidal lagoons and the White Paper on energy.
- Marine Spatial Planning and the Marine Act are important with the role of the Act in aggregate dredging and the use of the Severn.

The Forum was launched last year and had formal and informal aspects. It is SEP's annual event with the Joint Advisory Committee (JAC) meeting twice yearly. The JAC is a meeting of statutory and local advisory bodies, it involves the wider local community and local, regional and national planning strategies.

- The JAC was established to form a common platform.
- It involves the Association of Severn Estuary Relevant Authorities, the Severn Estuary Coastal Group, the Bristol Channel Counter Pollution Association, the Severn Health and Environmental Liaison and the Bristol Channel Yachting Group.
- The JAC produces an annual report and an action plan.
- SEP are launching a new membership structure designed to broaden involvement and to include more private sector organisations (industry, consultancy, NGO's, clubs and societies) as there is a higher percentage of public sector representation at present.

Natasha thanked all delegates for participating in the day and encouraged everyone to enjoy, learn and network.

Keynote Speaker

Larry Hildebrand, Environment Canada
Tidal 'Bores'

The Severn Estuary is often known as having the 'second highest tidal range in the world' after the Bay of Fundy in Canada. We are privileged to be able to welcome keynote speaker Larry Hildebrand to the Severn Estuary Forum. He comes from the site with the 'highest tidal range in the world'! Larry is internationally renowned for his contribution to promoting integrated coastal management and has lived and worked in and around the Bay of Fundy in



Canada for many years. He was a founder of the Bay of Fundy Ecosystem Partnership which provides similar services to the Severn Estuary Partnership. We welcome him to the Severn Estuary Forum to provide his thoughts and insights into tidal 'bores' – some food for thought about working together and some revealing insights into what the Severn and Fundy may have in common.

Simon Haslett introduced the international keynote speaker, Larry Hildebrand from Environment Canada to provide an insight into the Bay of Fundy and compare strategies with the Severn.

Larry thanked Simon and greeted delegates, asking them to turn their heads over to their right shoulder, the direction of the highest tides in the world in the Bay of Fundy. He had arrived yesterday and was 'impressed by our cute tidal range!' The Bay of Fundy lies in Eastern Canada between the provinces of Nova Scotia and New Brunswick. Due to the huge tidal range he felt people needed to adapt to it. There is diverse marine wildlife and a predominantly agricultural base.

Larry indicated why he was at the Forum. Research was carried out in the 1970's in the Bay of Fundy into the possibility of tidal power. There was little information on the Bay and the mudflat ecology, so a large range of studies were undertaken and it was then decided not to go forward with tidal power development. Larry indicated that he works for Environment Canada who are responsible for representing Canadian oceans, ICZM and marine management. He is also a PhD student in Wales.

Larry then made the following points:

- It is not natural or us to work on an estuary wide basis. There are many stakeholders, it's a big challenge.
- Why should we work together..? The coastal zone is complicated, fragile, threatened and heavily used. A different perspective is needed where everyone is together in networks and collaboration.
- The key drivers are: the existing momentum linking initiative, legislation and issues/opportunities. We need to see progress to achieve the goal.

Larry indicated that he is involved in three initiatives:

- The Atlantic Coastal Action Program at the local scale which deals with sustainability. The key has been funding and leadership at the local level, it is not a government run or funded program, it is up to the partners to build networks. It is operational for 15 years. We have had an excellent return with enthusiasm and commitment.
- The Bay of Fundy Ecosystem Partnership. It involves the whole Bay and its catchment area and management plans and actions to share information. It is at a wider scale than the Atlantic Coastal Action Program.
- Gulf of Maine. Much larger scale, in 1984 Canada won in a dispute to settle the position of the boundary with the US. The Gulf is a huge drainage area and Canada and the US must work across the border. In 1989 the Gulf of Maine Council of the Marine Environment was formed with the aims of planning and actions in the Gulf. The common goals and objectives are shared.



The UK has the Marine Bill, Canada has the Ocean Act 1997. It is similar to the Marine Bill in terms of objectives. Canada is split into 23 Federal Agencies, the government and the Agencies work in a similar way to the strategy in the Severn and climate change is a priority.

Tidal power has been considered due to the tidal range of 49ft or 15 metres. There is a small tidal power station at Annapolis Royal. It was looked at extensively in the 1970's and it was decided not to continue with further development as it would ruin the Bay system and

ecosystems – the Bay would have silted up. In 2007 things have developed - Nova Scotia have looked at the possibility of tidal power. A request for an environmental assessment has been submitted. Next month there is a conference, with an unofficial consortium and it is unlikely that a barrage will be looked at.

He had some observations to make about the SEP: fun, exciting, lots of sharing but what are the tough questions?

- Does it help us in our day to day jobs?
- Is the estuary better off?
- Do we know the social, environmental and economic state of the estuary?
- What is the value of the estuary and how do we quantify the value added?
- How do we differentiate between outcomes and outputs?
- What does a sustainably managed estuary look like in 20 years?
- A value is needed to weigh the effort off, what is the value added, there is a need to improve the estuary, the vision for the future is important to articulate.

His concluding remarks:

- What will keep us working together?
- Tidal power – opportunities and challenges
- Why are we here? What will make you come back?
- What are the tangible benefits of collaboration?
- What does the future Severn look like?
- How can the Bay of Fundy and the Severn learn from each other?
- Is it making a difference, is it worth the time?



Questions

Simon Haslett invited questions, which covered the following points:

- How does the Bay of Fundy and the Severn compare in size. LH: the Bay of Fundy is bigger!
- With regard to instream technology, I'm assuming it's an inverted wind turbine in the water. There is one in Somerset that produces 300kW of energy and works on the incoming and the outgoing tide. The barrage would need 28,000 of these to generate enough electricity, it would restrict shipping channels and may not be possible to get devices in to generate enough electricity. A barrage has been considered since 1932, it did not look economic a few years ago now you can have credits for renewable energy. LH: The Bay of Fundy is not considering a barrage but is considering energy generation of some sort.
- Last year there was an excellent approach but there is little enthusiasm from central government – we need to remember that. Central government needs to be involved.
- What are the flood risk issues in the Bay of Fundy, over 20 rivers drain into the Severn. The barrage can also be used to regulate sea level. LH: It's not a real issue in the Bay of Fundy. It is still dyked from the seventeenth century. The issues are there but they are smaller due to the Bay of Fundy being less developed than the Severn.

Simon Haslett indicated that there would be more opportunities for questions over lunch. Delegates attending the **Severn Estuary Climate Change Research Advisory Group** re-located to the Avon Suite.

Natural & Cultural Heritage

The statutory nature conservation bodies for England and Wales provided an overview of the natural heritage of the Severn Estuary.

Adrian Jowitt, Natural England *Natural Heritage of the Severn Estuary*



Synopsis: *The Severn Estuary is designated to the highest level in Europe for its natural environment. It is designated as a Special Protection Area (SPA) and candidate Special Area of Conservation under the EU Birds & Habitats Directives. It is also an internationally designated Ramsar wetland and a UK Site of Special Scientific Interest (SSSI). Adrian will highlight the key features of the Severn Estuary's natural heritage and offer his perspectives on the importance of working together.*

Adrian Jowitt has worked for Natural England and its predecessor organisation English Nature for 8 years and prior to that trained as an ecologist. He currently has a strategic role for the Severn Estuary and leads on energy issues for the south-west. Adrian is a colleague of Charlotte Pagendam in Natural England, who sits on the Association of Severn Estuary Relevant Authorities (ASERA) group. ASERA are responsible for monitoring the condition of the Severn Estuary European designated site.

Adrian introduced the natural heritage aspects of the Severn Estuary. He outlined the nature conservation designations which include:

- National – Sites of special Scientific Interest (SSSIs)
- European – Special Protection Area (SPA), possible Special Area of Conservation (pSAC)
- International – Ramsar

Adrian stressed the importance of viewing the estuary as a 25000 hectare ecosystem. The pSAC designation recognises the importance of the estuary itself in addition to the habitat and species that are the reasons for other designations. The saltmarsh and mudflat habitats provide flood defence services around the estuary and are the supporting habitat for the birds of the estuary. These provide the major wildlife spectacle on the estuary. Some bird numbers are in decline whereas others are increasing, but in general there is only currently about 4% decrease in the total number of birds from when the site was first designated as a Special Protection Area.

The estuary also provides a habitat for several species of rare fish including twaite shad, lamprey, atlantic salmon and eel.

Questions:

- Has there been any work on the potential positive benefits of a barrage on wildlife? Natural England's current view is that there may be a potential increase in production within the estuary system but that this does not necessarily make it a better wildlife environment.
- The UK Government would have to stand up to the European nature conservation designations should the barrage go ahead. The barrage could not go ahead under current nature conservation legislation. There should be more of a debate on 'why' people want the barrage.
- Should the Severn Estuary be put forward as a World Heritage Site? The point was raised about whether another designation would make much difference.
- Climate Change means that the estuary habitats will be changing. What is Natural England's view on managing this change? The Coastal Habitat Management Plan (CHaMP) has been developed by the Environment Agency and this document considers habitat change and flood defence issues.

Sue Rice, Countryside Council for Wales Newport Wetlands Centre

Synopsis: *Newport Wetlands Reserve was established as part of the compensation measures for the construction of Cardiff Bay Barrage. For the last three years CCW have been working in partnership with the RSPB and Newport City Council to develop environmental education and visitor facilities at the Reserve, including the construction of a new visitor centre. This work builds on the successes already achieved by the Reserve in attracting wildlife back into the area.*



Sue Rice currently works for the Countryside Council for Wales as Coastal Access Project Manager, but for the past 3 years has been working as Newport Wetlands Project Officer, responsible for co-ordinating the construction of a new Environmental Education and Visitor Centre at the Reserve in partnership with the RSPB and Newport City Council. Sue qualified as a Planner and worked for the Vale of Glamorgan Council for 10 years before moving to CCW.

Sue explained how the Newport Wetlands Centre came about – as part of compensation for the Cardiff Bay barrage as part of an EU legal requirement. The Countryside Council for Wales and Royal Society for the Protection of Birds had led the £3.2 million project. The initiative aimed to fulfil targets for habitats and species under the Biodiversity Action Plan. It also aimed to attract approx 18,000 visitors/year, including teachers and particularly local children to help avoid vandalism at the site in future. An education pack was being developed specifically for local teachers. The RSPB will run the centre.

Questions:

- The Wetlands are important. Why is CCW building on them? The least sensitive site was chosen. SR: there is a need to engage people to learn more about nature conservation issues. Without the centre, a majority of target audience people will not visit the wetlands.
- Younger children have been targeted, but what about the 20's & 30's? SR: there will be a variety of education and interpretation programmes aimed at 'lifelong learning' which will include guided walks, open days etc.

Panel of speakers & Debate

- **George Ashworth, Severn Estuary Partnership Management Group Chair**
- **Natasha Barker, Severn Estuary Partnership Officer**
- **Larry Hildebrand, Environment Canada**
- **Adrian Jowitt, Natural England**
- **Sue Rice, Countryside Council for Wales**

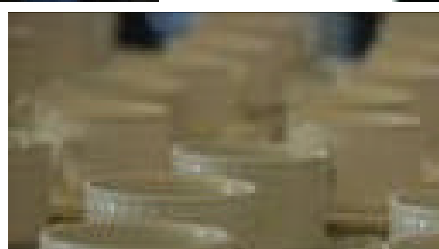
The following points were made in the panel debate:

- How are Marine Protected Areas considered in Canada? LH: there are currently 6 in the core zone where no extraction is allowed, with a further 6 soon to be designated.
- How can a monetary value be put on the Severn Estuary?
- Implementation of ICZM & local partnership initiatives. LH: in total there are about 50 in Atlantic Canada. Environment Canada contributes about \$400 000 to fund coastal partnerships. They consider that this funding has a multiplier effect of approx. 6.

- The estuary has areas of wilderness that do not have protected area status. How do we protect these areas? Discussions focused around planning now taking account of these factors.
- There was a call for open discussion on why people are calling for a Severn Estuary barrage. Limited research has been undertaken to date e.g. on the geomorphological implications and flooding. The introduction of a barrage may mean a lack of seawater in the system which could have a knock-on effect, e.g. on chemistry and the dispersing of pollutants. If the Severn barrage was built the tide would be halved. Unanticipated consequences were a concern.
- How can we account for wilderness and avoid piecemeal development and use of natural resources? Jonathan Porritt has recognised that estuaries are one of the last natural places left in England.
- Current deliberations over introducing new coastal access legislation is presenting challenges to the countryside agencies.
- World Heritage Site status – would another designation make a difference in planning terms?
- Sea level rise is a concern; would millions be spent on raising sea-walls?
- Severn bridge crossing – the first is coming to the end of its design life; do we keep building new crossings?
- Landowners needed to be actively involved in debate and decision-making – recommended the NFU / CLA be represented at future Severn Estuary Forums.

Lunch Break 1 & Informal Networking

A savoury buffet lunch was available, with exhibition and displays downstairs to encourage informal networking around the hotel.



Planning & Climate Change

Following the very informative sessions on climate change and marine planning held at the 1st Severn Estuary Forum in Clevedon last year, this session offered an insight into practical measures which are being taken to address strategic planning issues, particularly in response to climate change concerns.

Chair: Roger Wade, Environment Agency

Mark Scott, Environment Agency
Severn River Basin District – Working Together



Synopsis: *The talk will describe the main aims of the Water Framework Directive and the different approach and opportunities the Directive brings to how we manage the water environment. It will give an overview of river basin planning, explaining the stages and timetable for producing river basin management plans. It will also describe how we are working with others, including the River Basin District Liaison Panels, and the opportunities for people to get involved.*

Mark Scott has worked for the Environment Agency and before that the National Rivers Authority for over 17 years. He worked for 10 years as a fisheries scientist in North Wales, and then as a freshwater ecologist in the Midlands. In recent years Mark's work has focussed on the impacts that land use can have on the water environment. This has included managing a three-year European-funded project looking at the sustainable management of urban rivers in Birmingham. He started his current job as River Basin Programme Manager for the Severn River Basin District in March 2006.

Mark Scott, the River Basin Programme Manager for the Severn River Basin District presented an overview of the Water Framework Directive (WFD). The role of this EU Directive as a mechanism for the integrated management of river basins was highlighted. In particular, the WFD will tackle such issues as diffuse pollution, improving inland, coastal and groundwaters and improving habitats. The greater emphasis that the Directive places on ecology, coordinated cross-functional planning and more emphasis on stakeholder engagement was noted.



In Wales and England, the Environment Agency has identified 11 River Basin Districts (RBDs). The Severn Estuary RBD is managed by the Midlands Region of the Environment Agency.

The Environment Agency's consultation document entitled 'River Basin Planning: Working Together' is available for comment until 24th June 2007. A consultation on the significant issues identified for the Severn RBC entitled 'Summary of Significant Water Management Issues' will shortly be available for comment, with the consultation closing 24th July 2007. A Final River Basin Management Plan for the Severn will be in place by 22nd December 2009.

The role and need for stakeholder engagement within the WFD was discussed. The Environment Agency as the competent authority cannot deliver all the actions needed; therefore, an integrated approach is required with key stakeholders agreeing and implementing actions. River Basin Liaison Panels have been set up to achieve active stakeholder engagement; being non-statutory in their capacity, the Environment Agency as the competent authority has the power to make final decisions. Stakeholder engagement will also occur below River Basin Liaison Panels through the use of existing groups and networks

such as the Severn Estuary Partnership. The benefits of using the Severn Estuary Partnership with its clear geographical focus, includes the ability to facilitate additional events.

Questions from the floor

A Parish Councillor questioned how widely the document 'River Basin Planning: Working Together' has been disseminated. Mark indicated that the Environment Agency has used a database of key stakeholders to disseminate the document, along with press releases in some newspapers.

Rhoda Ballinger, Cardiff University Climate Change Research Advisory Group

Synopsis: *Climate change issues are at the forefront of public policy and the implications for the Severn Estuary and surrounding area need careful consideration. The Marine & Coastal Environment Research Group at Cardiff University, in conjunction with the Severn Estuary Partnership, are developing proposals for a Severn Estuary Climate Change Research Advisory Group. An inaugural meeting took place in Bristol in January 2007 involving academics from universities together with planners from the many different local authorities around the Severn Estuary. A 2nd meeting of this group takes place today at the conference (1100-1230) to consider options for taking forward the initiative. Rhoda will present the findings from the work to date and proposals for the way forward.*

Rhoda Ballinger gained her degree and doctorate from University College of Wales, Aberystwyth. Since taking up a lecturing post in Marine Geography at Cardiff University, she has developed research and teaching interests in coastal management and planning. She has written extensively on the institutional and policy context for ICZM development and has supervised many doctoral theses and research projects in this area. These include the current Interreg COREPOINT project, which is promoting best practice in ICZM throughout North West Europe, and a recent review of coastal and maritime pressures and initiatives for the National Assembly of Wales/Wales Coastal Maritime Partnership. Rhoda has also been closely involved with the development of the Severn Estuary Partnership over the last decade.



Progress to date on the development of a Research Advisory Group (RAG) for the Severn Estuary was presented. The impetus of the Severn RAG was outlined, including related commitments within the 2001 Severn Estuary Strategy and EU Interreg funding pump prime the initiation and development of RAG for the Severn Estuary. Initial research work has included a review of other estuary strategy development by UK Coastal Partnerships to identify both common and good practice. It was explained that the climate change focus of the Severn RAG stemmed from discussions with the SEP's Joint Advisory Committee and Management Group.

Preliminary work has seen the establishment of a Severn Estuary Research Citations Database (approximately 530 records) and a Severn Estuary Contacts list (approximately 135 organisations), with both expanding almost daily.

A workshop was held in Bristol in May, aimed at raising awareness of the potential of a RAG, network scientists and professionals, identify research priorities related to climate change and explore integration of research and policy. This successful meeting saw agreement amongst participants to pursue the development of a RAG for the Severn Estuary. A report (and summary) including presentations is available from the SEP website. Key priorities from the workshop included the need to downscale climate change assessments to the scale of the estuary, an assessment of the socio-economic impacts associated with climate change, an

assessment of the state of the whole estuary and the implications on coastal risk management. The driving factors for this being renewables, the built environment, tourism and beach management.

An additional meeting to consider the development of the Severn Estuary RAG was held earlier in the day of the Forum which was reported on. This identified the following priorities: the need for a bridge between strategic and tactical research, signposting of existing and future research, the need to increase accessibility and trust in existing research and the translation of research into something 'plain and simple' that can be used to mobilise the public. The need to look at other models such as the Channel Coast Observatory was put forward. With regards to the potential links of the RAG to other groups, the possibility of being a topic group of the SEP was suggested. It is envisaged that funding support would most likely be incremental with a technical research officer being needed.

A small steering group is to be established to address the operating procedures of the RAG and to explore further the research needs and priorities. The Severn Estuary Citations Database and the Severn Estuary Contacts List will be reviewed. A workshop will be held in the autumn in Cardiff on Friday 19th October 2007. Rhoda indicated that before the workshop email-based consultation and discussion on the development of the Climate Change RAG will occur.

Rhoda brought attention to the CoastNET Climate Change Conference being held in Cardiff on 22nd June 2007, discounts are available for SEP partners.

Tim Stojanovic, EU Corepoint Project *Working Together for Coastal Planning*



Synopsis: *Through the European Interreg COREPOINT project funding, Cardiff University have been working with the Severn Estuary Partnership to provide workshops for local authority planners around the Severn Estuary. With requirements for Strategic Environmental Assessment and Cumulative Assessment of development proposals, there is a need to consider planning issues beyond the administrative boundaries of individual local authorities. Planners from 14 local authorities around the Severn Estuary and Bristol Channel have been working together through 2 workshops this year to consider information requirements for coastal planning. Tim will report on progress from these workshops and some challenging issues planners face to work together to inform strategic planning issues.*

Tim Stojanovic is a member of the Marine and Coastal Environment Research Group at the School of Earth, Ocean and Planetary Sciences, Cardiff University. He gained his PhD from Cardiff Business School with a study of Integrated Coastal Management in England and Wales. His research interests include environmental management, information science and the coastal environment, and he has conducted research projects with a number of maritime partners in these fields. He is presently working within the EU Interreg COREPOINT North West European Research programme to encourage capacity for better coastal management. With a team of academics and practitioners he is responsible for the development of a series of Local Information Systems at the coast.

Tim presented findings from a workshop held with Local Authority Planning Officers from around the estuary. This included the identification of six issues to be addressed strategically around the estuary by coastal planning, these being:

1. Reducing offshore impacts of development
2. Coastal access
3. Flooding / erosion
4. Marine nature conservation

5. Accommodation of accelerated sea level rise
6. Impacts of development offshore

This workshop included a jigsaw exercise to identify areas of development around the estuary. These outputs have been used to inform a visualisation IT based fly-through using GIS-based software; this was shown to the audience. The purpose of this form of visualisation is that it seeks to increase awareness of development around the estuary and the need for a strategic understanding to be had by Local Authorities (and consultants).

Coastal-related development plan policies in existence around the estuary have been identified and will be made available shortly from the SEP website.

It was explained that work and research with Local Authority planners has been carried out to examine the opportunities offered by the Strategic Environmental Assessment (SEA) process for the strategic consideration by Local Authorities of coastal issues (such as those identified above). A Local Information System to aid the practicalities of the SEA's 7 steps with 100 coastal-related datasets is in development through.

Questions from the floor: Levels of siltation around the estuary were discussed, as an audience member highlighted the possible lower levels produced from organic farms. The Chair highlighted processes occurring on the estuary are part of the wider catchment, therefore when discussing the cause and effect of siltation there is a need to look wider up the catchment.

Panel of speakers & Debate

- **Mark Scott, Environment Agency**
- **Rhoda Ballinger, Cardiff University**
- **Tim Stojanovic, EU Corepoint Project**
- **Steve Collins, Defra – ICZM specialist, Marine Bill team**

A discussion as to whether there was a perception that development was occurring in flood risk areas around the Severn, in the case of Monmouthshire County Council it was noted that there was little if any.



Information about existing models for climate change scenarios was sought. The Chair indicated the work done by the UK Climate Impacts Programme (UKCIP) and the Foresight Future Flooding report.

Lunch Break 2 & Informal Networking

A sweet buffet lunch was available with the exhibition and display area downstairs to encourage informal networking.

Tidal Energy

The UK's Sustainable Development Commission (SDC) are releasing a report later this year on 'Tidal Power Options for the UK'. Recommendations will include reference to the Severn Estuary. Consultants working for the SDC are presenting information that has been used in national stakeholder engagement workshops.

Chair: Craig Frost, South West Regional Assembly

Ann Savage, Entec (SDC Tidal Power in the UK Project Consultant)

An Introduction to Tidal Energy

Synopsis: *This presentation aims to give a basic overview of the UK's tidal resource, and to introduce the different technologies which can be used to produce electricity from the tides. The potential contribution of tidal energy to the UK's energy market will be considered, along with the cost of different technologies and the cost of the electricity which they could produce. The presentation will also give a brief overview of some of the environmental, social and economic considerations which are connected with the generation of tidal power in the UK.*



Anne Savage is a consultant with Entec UK Ltd, and has been the project manager for Entec's contribution to the Sustainable Development Commission's tidal power project. Entec have been responsible for providing the SDC with an overview of tidal power in the UK, covering covers technological, environmental, social and economic aspects.

Anne is a marine ecologist by training, having completed an M.Sc. in Oceanography in 1997 and a D.Phil. in marine ecology in 2001. Since that time Anne has held a number of environmental posts, and has spent time working as a VSO teacher in Rwanda. She joined Entec in 2006.

Entec consultants have been commissioned by the Sustainable Development Commission to consider and review UK-wide tidal energy options and examine these in relation to the three aspects of sustainability: environmental, social and economic. The presentation drew attention to the two main types of tidal energy: tidal stream and tidal range, highlighting that they are not always in the same place. In essence, tidal stream energy is considered to be high risk and high cost, with costs likely to fall; all tidal stream projects are in development stage (mostly prototype) with none connected to the national grid. In comparison, tidal range (barrages and lagoons) is considered to be low risk and high cost, with costs less likely to fall.



Entec have sourced a large number of projected cost estimates for tidal energy from various pieces of literature. Anne highlighted that there are several factors affecting the cost of energy including the type of technology, stage of project, scale of scheme and location of scheme. Projected figures of cost may or may not have incorporated financial considerations of mitigation and decommissioning.

Entec identified the following potential impacts and issues associated with tidal energy:

Potential environmental issues:

- CO₂ – lifecycle emission saving
- Sediment and currents – erosion, scour, deposition
- Water quality – clarity, toxic substances, algal blooms

- Noise – underwater, air borne
- Ecology – seabed fish, mammals, intertidal area
- Legislation – protected sites and species

Potential Economic Issues:

- Job creation- construction
- Infrastructure – ports, harbours, amenities
- Commercial shipping – navigational safety, safety zones
- Fishing industry – safety zones, fish stocks
- Grid connection – location, upgrades
- Flooding – flood risk, flood defence

Potential Social Issues:

- Recreation – safety zone
- Transport – improved roads
- Tourism – new jobs, visitor schemes
- Seascape – visual effect
- Community development – ‘green glo’

Anne provided her contact details: Anne.savage@entecuk.co.uk

**Clive Baker, Black & Veatch (SDC Tidal Power in the UK Project Consultant)
Tidal Energy – Severn Barrage Options**

Synopsis: *This is a brief summary of a review recently carried out for the Sustainable Development Commission. This involved a comparison of the main proposals for developing the energy resource of the high tidal range in the Severn Estuary and Inner Bristol Channel for electricity generation. These schemes include the Cardiff-Weston and The Shoots barrages, and tidal ‘lagoons’ located outside the main shipping channels. The schemes are compared on the basis of size, annual energy output, unit costs of energy generated, and some of their more important environmental and social impacts.*



Clive Baker is a Consultant to Black & Veatch. He is a hydropower engineer who, since 1978, has led a number of studies of tidal power for Government and private industry. Early work concentrated on the Severn estuary, then expanded to include both large and small estuaries around the UK coast. Since 2000 he has been an independent assessor for DTI’s programme of supporting proposals for devices for generating electricity from tides, tidal currents and waves. Recently he has been responsible for the review of technical aspects of Severn barrage schemes for SDC and lead author of a review for DTI of the Swansea tidal lagoon concept.

This presentation considered the historical and current tidal barrage options for the Severn Estuary. The Severn Barrage Committee in 1978 commissioned consultants to determine location, cost and benefits of a Severn Barrage. The most economical site determined by this work is the current proposed location site (Cardiff-Weston). The Severn Tidal Barrage Group have produced reports in 1986, 1991 and 1993.

Chris gave an overview of the dynamics and mechanisms associated with barrage engineering and the harnessing of tidal power through a Severn Barrage. Several environmental and social considerations associated with a Severn Barrage were highlighted.

These include:

Environmental:

- Habitat designations - critical
- Sedimentation – (noted the need advanced technology to determine what the sediments would do)
- Water quality
- Migratory species of fish
- Wading birds
- Water levels – potential reduction for ports

Social:

- Navigation and ports
- Flood protection
- Recreation and tourism – increase in possibilities
- Transport links – e.g. rail and road

Mervyn Bramley, University of the West of England & RSA*
Public Engagement with Tidal Power Options

Synopsis: *Proper public engagement is an essential part of the decision-making process leading to the sustainable development, or further shelving, of any scheme to utilise tidal power from the Severn Estuary. In Wales and the South West, while the public are broadly aware that there is major potential for development of their “green gold” in the Severn Estuary, they are not well informed about the cases for or against this. There are clear signs however that they feel the time has come for Government and key stakeholders to move forward openly and boldly towards a best overall option. The RSA and Severn Estuary Partnership intend to work with local universities, taking a neutral role, to help the public understand the science and the uncertainties, the cases for and against development, and the rational steps towards appropriate development. In particular we aim to promote public forums in Wales and Bristol where the public can hear the arguments and reach their own conclusions based on the available evidence.*

Mervyn Bramley OBE is a civil engineer experienced in environmental management. After serving on VSO in Malaysia, he worked with water engineering consultants Binnie & Partners for 14 years. In 1983, he moved to the Construction Industry Research & Information Association (CIRIA) to manage its Water Engineering programme. He was appointed Head of R&D with the National Rivers Authority when it was set up in 1989, and subsequently held a similar post with the Environment Agency until 2000 when he became the Environment Agency’s Flood Defence Development Manager. He has played a major role developing environmental management policy and Flood Risk Management practice. He retired in 2004 and is an independent engineer and environmentalist.



* Royal Society for the encouragement of Arts, Manufactures and Commerce

This presentation introduced the need for public engagement on the issues of tidal power in the Severn. As part of this, it was proposed that there should be a move from informing the public, towards public engagement. For this to occur, it was suggested that there needs a clear presentation of the range of options for tidal power, an increased programme of research activities and major public forums (in Cardiff and Bristol) following the Sustainable Development Commission report due out September 2007.

Research has been carried out into the main public perceptions of tidal power in the Severn. It was indicated that these include the value of the Severn as an environment, as a resource

for development, as a visual landscape / seascape, its value as 'green gold' for combating climate change and the role of tidal power in the Severn for regional development.

Panel of speakers & Debate

- Ann Savage, Entec
- Clive Baker, Black & Veatch
- Mervyn Bramley, University of the West of England & RSA

The following points were made in the panel debate:

On the matter of public engagement / power sharing, it was noted that although it was everyone's estuary, not everyone makes decisions, therefore who would make the final decision over a barrage. It was advised that the Department of Trade and Industry would take the lead with regards to decision-making due to it being a major national issue.

One audience member enquired as whether or not, post-construction of a barrage if the Severn Bore would exist, it was commented that it was unlikely to.

Industry & Infrastructure Heritage Exhibition

A variety of exhibitors and industry representatives who operate around the Severn Estuary presented material during an informal networking session.

The launch of a new maritime heritage education pack for schools took place during this session.

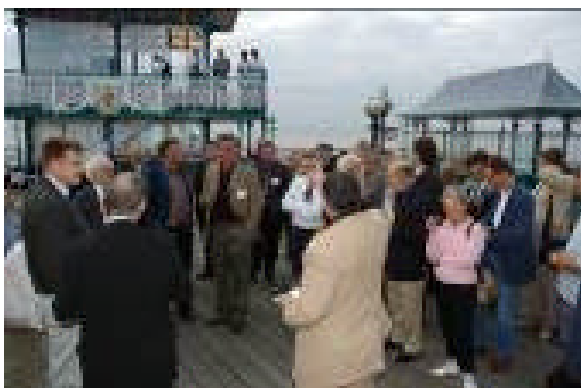


Clevedon Pier Evening Reception

Approximately 40 delegates went to Clevedon Pier for the social event following the conference. Whilst listening to jazz & enjoying some wine & cheese, Chris Wooldridge (Chair of the 1st Severn Estuary Forum) introduced a range of speeches from people to highlight estuary interests and local knowledge:

- Linda Strong: Clevedon Pier Manager and Clevedon Sea Angling Club
- Don Sutherland – Bristol Channel 'Blue Book' launch & Clevedon Sailing Club
- Mark Chislett – Hobbler for the Waverley & Balmoral
- Jane Lily – Local Clevedon historian
- Caroline Stubbs – Local artist from Portishead

The evening social finished at 7pm.



Feedback Evaluation

Twelve evaluation forms were returned on the day or after the event by post. The usefulness of speakers presentations was scored highly. Overall satisfaction with the day was very positive, with a large number of emails received after the event thanking the SEP for organising the day. The topics covered were very well received. The most common concern raised related to restrictions with the size/facilities of the venue. Specific comments made included:

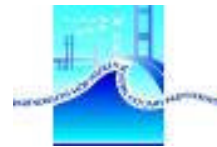
- Excellent keynote speaker;
- No cultural heritage speaker;
- More time for discussion;
- Bias of environmental attendance; need for better representation from regional government;
- SEP made a strong case for championing neutrality, objectivity & science;
- Overall ambience of the day was good
- An excellent day with lots of information and a good opportunity for questions and networking.



Recommendations for future Severn Estuary Forums:

- More topic variation;
- Handouts of speakers presentations would be welcomed;
- Invite commercial sector speakers;
- Encourage SEP partners to take a more active role in organisation;
- Welsh side of the estuary next year?
- Review the value of the social event.

Natasha Barker
Severn Estuary Partnership Officer
29th June 2007.



***Working together
for the future of
our Estuary***