

West of England Partnership
16 April 2009

Severn Tidal Power

Purpose of report

To consider a response to the Consultation Document (available at: <http://severntidalpowerconsultation.decc.gov.uk/>) with the assistance of:

- i. a presentation by Sarah Rhodes, Head of Feasibility Study at the Department of Energy & Climate Change, followed by a question and answer session
- ii. this report, in particular:
 - national consultation questions (Paragraph 2 and Appendix 2)
 - map of the long listed proposals (Appendix 1)
 - draft short list of proposals (Paragraph 22)
 - some questions and comments raised in the sub-region:
 - economic impact (Appendix 3)
 - issues for the proposed Strategic Environmental Assessment (Appendix 4)
- iii. the outcome of discussions by Board Partners organisations.

Background

1. The Government is consulting on the proposal to use the tidal power of the Severn Estuary to generate electricity. The initial scoping report has reduced ten initial options down to a shortlist of five. The Government is now consulting on the work to date and on the scope of the feasibility studies for the next phase. The 236 page consultation document and associated reports are available at: <http://severntidalpowerconsultation.decc.gov.uk/> and the deadline for responses is 23 April.
2. In January 2008 the Government launched a two-year feasibility study to investigate whether to support a Severn tidal power scheme and if so, on what terms. The study is considering the costs, benefits and impact of the generation of tidal power in the Severn Estuary. The study is now at its mid-way point. The interim Consultation Document now seeks views on:
 - the process used to move from the long-list to the short-list of schemes;
 - the proposed shortlist; and
 - the issues proposed for further investigation, including the scope of the Strategic Environmental Assessment.
3. The decision as to whether or not to support a Severn tidal power scheme will be taken by Government following further consideration of the issues and a second public consultation, probably in 2010.

Background to the consultation

4. Under the Climate Change Act the Government is required to reduce greenhouse gas emissions by 80% by 2050. The draft UK Renewable Energy Strategy considers ways in which the UK can meet, in the most cost-effective manner, our proposed target of supplying 15% of energy (electricity, heat and transport) from renewable sources by 2020. The measures proposed for the Renewable Energy Strategy aim to stimulate the market to deliver the necessary investment by providing a clear long term policy framework and removing the practical barriers to renewable generation.
5. The Committee on Climate Change proposed in December 2008 that the electricity sector should be largely de-carbonised by 2030. There are a number of ways this could be achieved – reducing our energy demand, investing in nuclear and renewable power, capturing the carbon emissions of new and existing fossil fuel power stations. It is likely that all of these will need to be pursued.
6. The Severn Estuary's 14m (45 foot) tidal range represents a very large source of indigenous, predictable (though intermittent), low-carbon energy. The largest proposal to make use of the Severn's power would save more CO₂ than turning off two medium-sized coal-fired power stations.
7. Different proposals for Severn tidal power have different effects on local services, businesses, numbers of jobs (both removal and creation), biodiversity, the natural environment and the landscape.

The Feasibility Study

8. The two-year feasibility study is to investigate whether the Government could support a Severn tidal power scheme and, if so, on what terms. The study is considering the costs, benefits and impact of the generation of tidal power in the Severn Estuary. The interim Consultation Document seeks views on the process used to move from the long-list to the short-list of schemes, the proposed shortlist, and the issues proposed for further investigation, including the scope of the Strategic Environmental Assessment.
9. A Severn tidal power project would have benefits, costs and risks and a provisional assessment of these is set out in the consultation paper. Also published are the reports that have been prepared for the study by external consultants. The decision on whether to go ahead with a Severn power generation scheme will be made by the Government after consideration in the context of the alternative means of meeting the UK energy and climate change goals.
10. The draft Renewable Energy Strategy suggests that a Severn tidal power generation may not be essential for meeting 2020 targets on renewable energy. Other sources of supply exist, and Severn tidal power must be considered on its merits alongside these. Government analysis of comparative costs shows that while Severn tidal power is relatively expensive compared to current cost estimates for other renewable sources (particularly in the 35 year financing period when the capital costs are being paid off), it could potentially reduce the cost of meeting the renewable energy target of supplying 15% of energy from renewable sources by 2020.

The Proposals

11. Ten proposals to generate electricity from the Severn Estuary came forward from a public Call for Proposals in May 2008 and a strategic review of existing options used in the Sustainable Development Commission's and previous reports. Proposals include barrages, land-connected and offshore lagoons, a tidal fence and a tidal reef. These proposed schemes are in varying stages of development, with some using tried and tested technology and others using tested structures but completely new materials. Some proposals are based on embryonic technologies, which have not been prototyped or deployed, let alone at the huge scale proposed. Locations vary too, with the largest schemes spanning the Estuary from Minehead to Aberthaw (15 miles) and the smallest lying upstream of the Severn road crossings. Energy outputs also vary with the largest option (the Outer Barrage) estimated to generate up to 7% of UK electricity and the smallest generating roughly the same output as a large fossil fuel power plant (see map in Appendix 1).
12. **Environmental Impacts:** The Severn Estuary is an internationally important nature conservation site for the species that occur there, including migratory fish and over-wintering birds and for its estuarine habitats including mudflat and salt marsh. The impact of both barrages and lagoons would be to retain water: low tide levels would rise slightly upstream and within impounded areas and overall high tide levels would be reduced by about a metre. Some areas of habitat currently uncovered at low tide would be permanently underwater, displacing bird populations. The passage of migratory fish, like eel and Atlantic salmon, would be impeded and high mortality rates for some species would be expected. Impacts on protected sites would need to be compensated for under environmental protection legislation, which safeguards our biodiversity and water quality. The environmental effects of the innovative technology schemes – the tidal reef and tidal fence – are currently unclear as these proposals are less detailed, but they may be less damaging than barrages or lagoons.
13. **Flood risk impacts:** These have been considered. Severn power development is not expected to affect upstream flooding of the Severn, such as the floods that occurred around Tewkesbury in 2007. It could, depending on the scheme, provide positive benefits by protecting against storm surge flooding from the sea. Further studies are being done to understand how the suspended sediments and wave action in the Estuary would be affected, and whether this might put pressure on coastal flood defence (and therefore add to the costs of a scheme). Some land drainage systems that discharge through structures that are controlled by the tides would be affected and might require pumped drainage as a remedy.
14. **Economic Impact:** Severn tidal power development is expected to benefit the economies of Wales and the South West of England. A larger scheme is centrally estimated to bring an annual average of 1,500 additional jobs during a construction period of up to 10 years; a smaller scheme would be closer to 500 jobs annually over 5 years. Operation of a scheme would create additional jobs both directly and indirectly, centrally estimated to be up to an annual average of 200 for a large scheme and up to 50 annually for a small one. These figures are net of estimated negative impacts on, for example, employment in ports and fisheries in the Estuary and surrounding area. Taken together, construction and the initial 30 years of the operational phase can be expected to deliver £3.55billion for a larger scheme, or £620m for a smaller scheme, net additional Gross Value Added to the local economies.

15. **Transport Link:** A barrage across the Severn Estuary could carry a new road or rail link. A link would be expensive, as it would need to be elevated to provide adequate clearance for vessels to pass through locks and would not necessarily be less expensive than a separate construction structure. The feasibility study has commissioned work by Network Rail and the Highways Agency and has found no evidence that the existing road and rail infrastructure is inadequate or unable to meet anticipated traffic for at least the next 15-20 years. However, it is possible that new transport links will be needed beyond 2030. With this in mind it would be feasible to accommodate suitable foundations either as part of the design of a barrage or subsequently by developing a design that adapted the existing structure for a future transport link. Any such development would be subject to environmental and other assessments at the time.
16. **Government Support for Private Sector Development:** It is estimated that all proposals would require some Government support through planning and possibly construction phases due to their high capital costs and the scale of regulatory risks, particularly on the environmental side. The costs of this support would fall on electricity consumers and taxpayers. For the smaller schemes (with an estimated construction cost of £2-4 billion and output of 2-3 Terra-Watt hours (TWh) annually) the private sector could reasonably be expected to own, finance and take on most of the construction risk, provided there is sufficient revenue certainty. However, a larger scheme (such as the Cardiff-Weston barrage, with an estimated construction cost of £20.9 billion⁴ and annual output of 17TWh) would need Government assistance to finance its construction. The private sector could operate any scheme constructed. Like almost all renewable energy generation, all proposed schemes would require revenue support in addition to revenues from power prices during the financing lifetime of their operation (the first 35 years) in order for them to be price competitive with non-renewable electricity sources. Beyond this period, the schemes could generate power for a low upkeep cost for the remainder of their estimated 120 year minimum lifespan.
17. **Combination of proposals:** Some schemes could work in combination with each other; for example a lagoon with a barrage further upstream or a combination of lagoons. The option of a suitable combination of short-listed schemes and the benefits and risks these might bring will be considered by the feasibility study.
18. **Transmission of Power:** A Severn tidal power project would also require investment in new transmission assets, such as grid connections, cables and relays, depending on the size and location of the scheme. The balancing of intermittent but predictable power generation and demand will require consideration, particularly for the larger schemes. These aspects will be considered in greater detail in the next phase of the feasibility study.
19. The proposed schemes could generate electricity for 4-6 hours roughly twice a day if using the ebb tide. The study is considering methods to even out generation, or to manage demand, and the effects on the structure and functioning of energy markets.
20. **Criteria for draft short list of proposals:** The ten long-listed proposals to generate electricity from the Severn have been assessed for their feasibility. In the context of the study, feasibility means whether the project has a realistic prospect of being built and whether it could meet the objectives of the study. Five key areas were identified as determining feasibility:
 - technical risk;

- the cost and amount of energy produced;
- affordability and value for money for the public sector;
- the environmental impacts; and
- regional level economic and social impacts.

21. The Government considers it important to work towards the widest possible range of feasible options for generating energy from the Severn Estuary – options where there is already evidence to indicate they are potentially feasible as well as the less developed and more innovative proposals that have come forward.

The draft short list of proposals

22. The Government proposes short-listing the following proposals based on traditional hydroelectric technologies, incorporating a mix of existing and new construction techniques:

- Beachley Barrage (cost of energy: £137 per Mega-Watt-hour (MWh))
- Bridgwater Bay Lagoon (£142 p/MWh)
- Cardiff-Weston Barrage (£127 p/MWh)
- Fleming Lagoon (£183p/MWh)
- Shoots Barrage (£104 p/MWh).

23. The largest of these is the Cardiff-Weston barrage. With an estimated construction cost of around £21 billion it would be more than five times the cost of other schemes on the proposed shortlist. Unlike the other options, its construction could not be funded by the private sector alone and taxpayers/consumers would likely bear a large part of the cost burden and risk. However, this barrage could also make a significant contribution to our energy goals and we therefore propose to study it further. This will allow the scale of environmental impact and options for mitigation and compensation to be studied.

24. **Schemes based on well-understood technologies:** The proposed short-listed schemes are based on relatively well-understood hydroelectric technologies, with a mix of existing and new engineering structures. Not all barrage and lagoon schemes have been short-listed. Some do not perform well in terms of the assessment criteria as they have extremely high costs of energy, for example.

25. **Innovative Schemes:** The Government is keen to continue to consider innovative schemes that may be less environmentally damaging; but some of those that have been submitted to the feasibility study – the tidal fence and tidal reef – are not sufficiently developed technically at this point for more detailed evaluation. However, a new £500,000 fund has been launched to support the development of embryonic technologies, and their progress will be taken into account before decisions are taken whether to go ahead with a Severn tidal power scheme.

26. Substantial Government financial support is available for low-carbon energy innovation to speed the development of such innovative proposals for example through the Energy Technologies Institute, the Carbon Trust and the £50 million Marine Renewables Deployment Fund. The Government would like to see these proposals develop further with the benefit of funding support and commits to considering their progress alongside the other schemes – in particular the Cardiff-Weston barrage which could be on a similar scale – before taking decisions on Severn tidal power generation.

The Strategic Environmental Assessment

27. The short-list will make up the reasonable alternatives for Strategic Environmental Assessment (SEA). The SEA is a major part of the feasibility study. It predicts and analyses the environmental and social effects of the short-listed tidal power options to inform decision making. The SEA Scoping Report (see the Consultation Document) sets out how the Government proposes assessing the environmental and social effects of the short-listed tidal power options over their lifetimes. The Scoping Report establishes baselines and proposes objectives for the scope of the overall SEA. In turn, each objective comprises detailed assessment criteria which facilitate the comparison of the different project proposals on equal terms.
28. In addition to Strategic Environmental Assessment, the next phase of the feasibility study will consider the impacts of the various short-listed schemes, including on the construction supply chain, and on the energy market and grid. Ecosystem valuation will be used to assign a value to environmental and social impacts. Also considered will be potential compliance with environmental protection legislation and the means of ensuring that environmental effects could be mitigated where possible and compensated for if they cannot be mitigated. These studies, and others, will form the evidence base for a decision whether the Government could support a Severn tidal power project and, if so, what the project might be and on what terms it might be supported. Further public consultation, probably in 2010, will seek views on the evidence gathered and the analysis, and will feed into the decision by Government on whether a scheme could be taken forward with Government support. The option remains open not to proceed with any scheme.
29. **Timescales if the project proceeds:** If a Severn tidal power project does proceed, it will be subject to the planning and consenting process before construction could begin. This may take 3-5 years and construction at least a further 5-7 years, depending on the scheme or combination of schemes that is selected and whether the development is approved.

West of England response

30. Appendix 2 contains draft responses to the consultation questions. The suggested responses are based on issues raised at a stakeholder workshop held on 16 March and subsequent officer and member discussions.

Recommendation

That Board members agree their response to the consultation.

Appendix 1: Map showing locations of the ten proposals with the five options proposed for the shortlist highlighted

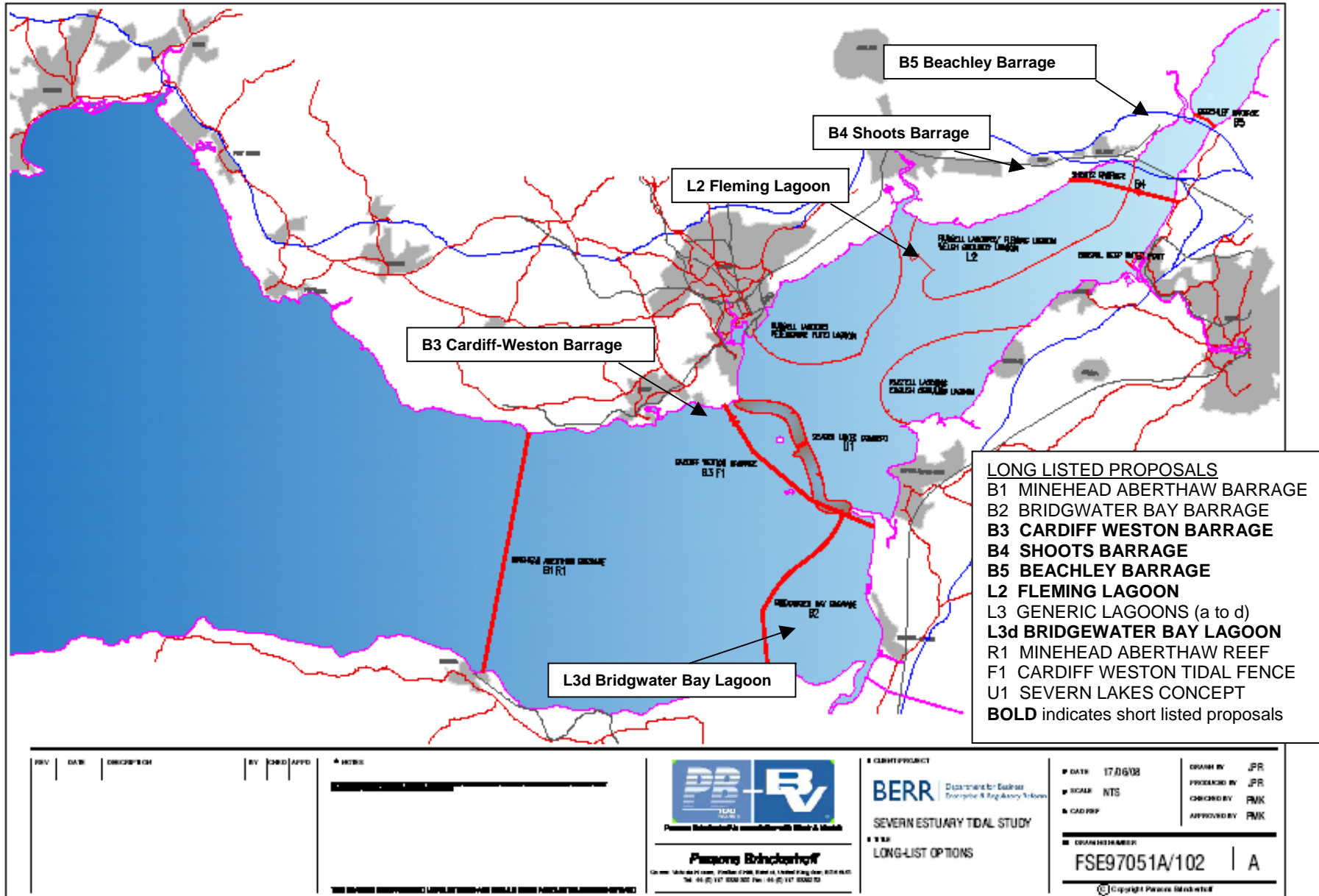
Appendix 2: Draft responses to the consultation questions (please note these responses are collated but not appraised)

Appendix 3: Economic Impact questions and comments

Appendix 4: Strategic Economic Assessment (SEA): Issues for the Study

Author: Marian Barber, Head of Economy and Regeneration, North Somerset Council

Appendix 1: Locations of the ten proposals with the five options proposed for the shortlist highlighted



Appendix 2

The Consultation Document and supporting reports are on the internet at <http://severtidalpowerconsultation.decc.gov.uk>.

Below are the main consultation questions with collated responses alongside (please note that these are collated and in some cases may include contradictory views).

Consultation questions		Suggested responses
General Questions		
1	Is the feasibility study taking the right issues into account?	<p>Broadly yes, but it needs to be more explicit regarding how much uncertainty is contained in the assumptions made; for example, the creation of construction jobs is assumed to have a positive impact on accommodation sector, but no mention is made of the impact on services such as health provision, which could be negative.</p> <p>Are the figures accurate in the light of the current recession? The impact of the downturn in the economy must be carefully factored in.</p>
2	Are there other aspects or other evidence that should be taken into consideration?	<p>The study needs to be explicit regarding the geographical impact; for example, after London (at 23rd place) the next English city in the European league table of economic performance is Bristol (34th place) (ODPM, State of the English Cities, 2006). It is likely that a small negative impact in the Bristol City Region would have a disproportionately large negative impact on the South West of England and Wales (the extent of the area of impact as defined in the Regional Economic Impacts report).</p>
3	Have we given due weighting to the different benefits and impacts under consideration in our analysis?	<p>How are the social effects being measured?</p> <p>The impact of locks on the operation of shipping and ports (as well as on fish, sedimentation and ecology) should be given great weight.</p> <p>What will be the impact on CO2 emissions in this area during and after the construction? This is a particular concern if local authority areas are going to be expected to show year-on-year reductions and penalised if they fail to achieve them. How will government ensure that the construction is environmental best practice?</p>

Consultation questions		Suggested responses
		Carbon impact of each option needs greater clarification.
3	Have we given due weighting to the different benefits and impacts under consideration in our analysis?	<p>Need a better understanding of the comparative costs of, and ease of, maintenance of each option. Need to understand the 'downtime' in terms of loss of energy generation.</p> <p>Greater weight should be given to the uncertainty (negative) regarding the effect of changed sedimentation location/rates and tidal range on the ecology of the estuary.</p> <p>Flood risk – a barrier could help us in adapting to climate change (LAA target NI 188), but need more detail about the specific impact.</p>
4	Do you think that it is better to wait for new and perhaps less environmentally damaging technologies to be developed, or to move ahead more quickly with available proposals?	<p>'Tried and tested technology' is yesterday's technology by definition. It can be outdated and inappropriate for today's society.</p> <p>There is a range of new technology available today but it has not yet been used on a massive scale. Perhaps it is beneficial to progress a number of smaller options utilising today's technology and thus minimising our dependence on one option or source.</p> <p>Cumulative benefit/effect of a number of smaller schemes is likely to show reduced negative impact. Would also show a better spread of economic and social benefits and would reduce the impact of mechanical failure on energy generation.</p> <p>Progressing new technology today will have long term benefits by stimulating and supporting industry involved in production of energy efficient and renewable energy component production.</p> <p>There is the opportunity to move ahead quickly with less damaging technologies already on the table.</p>
Regional Economic Impacts		
5	Do you agree with the conclusions of the DTZ study and are there any other factors that the feasibility study should be aware of?	Bristol City Region is high on the GDP league table of European cities – London is the only UK city above it. Impacts on the economy of the sub-region are likely to have a disproportionately high impact on the whole region.

Consultation questions		Suggested responses
5	Do you agree with the conclusions of the DTZ study and are there any other factors that the feasibility study should be aware of?	The study makes assumptions regarding job losses and gains – this is understood. However, the study should be much more explicit about the grounds for excluding estimated figures for job losses; for example, jobs gained in tourism have been included on the assumption that people will visit a barrage (as a destination in its own right), but there has been no inclusion of job losses, apparently because of no consideration of what might cause jobs to be lost.
		The economic effects on caravan parks needs to be understood.
		Will marine cargoes be transferred to road/rail or displaced to other ports?
		Will the range of skills in the sub-region be met by new / altered job availability?
		Long-term and high value jobs are important to the sub-region.
		Where are the construction workers coming from? Where will they live? Impact on local services should be assessed – during AND after construction.
		Much greater information is needed on the economic impact of the reduced tidal range on the leisure industry, both in terms of changes to the ecology (eg fewer fish) and water quality.
		Access to moorings. Access to Steephholm.
		The Cardiff Weston Barrage option appears to take 120 years to 'break even' but has a lifetime of only 100yrs. Has this negative value been taken into account properly? Has the cost of future dismantling/disposal been taken into account?
		What is the broader effect on smaller companies?

Consultation questions		Suggested responses
5	Do you agree with the conclusions of the DTZ study and are there any other factors that the feasibility study should be aware of?	It is assumed that the impact on environmental technologies will be positive (which it will be, in statistical terms given the size of this one project), but what about the broader effect on smaller companies, technologies and innovations – will it create a ‘cluster’, or will it draw away available resources (particularly intellectual resources)? Need to take a pro-active approach to spread the benefits, working with local universities, colleges, sectoral networks, local skills providers, apprenticeship schemes, etc.
		What are the other sectors that might be affected, and how? What is our view about the impact on the Port (employs 5000 people)?
		The loss of port-related jobs appears to be compensated by jobs from new uses. However, the reasoning is not robust. It seems to say that the port landowners will not let the land remain unused and presumes that a quantum of jobs will be created. Greater clarity is needed regarding the assessment of these assumptions.
		A more rigorous explanation of the jobs created/maintained is needed.
		Need to look carefully at the comparative impacts on the local / regional / national job market.
		Would like to see greater clarity (full list) regarding the ‘gains and losses’ referred to in order to be sure whether the balance is positive or negative.
		The supply chain issue is extremely important. Where will the materials be sourced? Will the building of a scheme in the Severn Estuary impact negatively on other projects / businesses in the region?
		Any provision from the building of any scheme should contribute positively to local community needs and local economy (not just be taken away at the end of construction).

Consultation questions		Suggested responses
5	Do you agree with the conclusions of the DTZ study and are there any other factors that the feasibility study should be aware of?	<p>The option for road / rail link on a Weston-Cardiff barrage should be considered in a wider forum. Strategic Rail Authority and Highways Agency consider it appropriate in the longer term but other stakeholders may consider it appropriate in the short term.</p> <p>Weston might be by-passed by (rather than benefit from) transport solutions across a barrage.</p>
Financing and Subsidy Mechanism		
6	Do you agree with PricewaterhouseCoopers' (PwC) analysis on ownership and delivery of a Severn scheme?	
7	Are there any other options for delivery or subsidy that should be considered? Would they be appropriate for all of the tidal power options under consideration?	
8	Government believes that the private sector is best placed to design, build and operate a Severn tidal scheme. Government's role would be to set the conditions in which a scheme could come forward. Do you agree?	
Impacts on Energy Markets		
9	What are the impacts and potential risks of tidal intermittency on the balancing and energy market?	
10	Is it worth considering exploring the option of demand management?	Need to view a suite of options (not just tidal range) to provide a greater spread of energy generation to match demand better.
11	Do you consider that a Severn tidal scheme could impact on investment in other energy supply capacity, and if so in what ways?	<p>Maximum demand (eg on a cold winter evening when the tide is not generating energy) will requires a back up. How is this to be provided?</p> <p>Is research on methods of energy storage (other than pumping water) being investigated?</p>

Consultation questions		Suggested responses
Short-listing Process		
12	Do you agree with the factors that have been used to determine the short-list for further study?	
13	Do you agree that the test of economic feasibility should be relative to the cost of other renewables?	No - not in isolation. The test needs to take account of the comparator impacts on environmental and social issues. The test should be on the raw values excluding subsidy. For example, subsidy on wind energy technology was to develop and test the new technology, whereas the shortlisted options are old technology.
14	Do you have any further comments on Parsons Brinckerhoff's Interim Options Appraisal Report? Please support your response with evidence where possible.	The tidal reef and tidal fence have been excluded but there is the possibility of further research. If research shows they are credible, can they be added to the shortlist taken forward at the end of this feasibility study?
Severn Tidal Power Proposals		
15	Do you agree that the two lagoon options selected for further study represent a good basis for studying the lagoons?	
16	Given the short-listing criteria, are there any proposals on the short-list which are not suitable? Please support your response with evidence where appropriate.	
17	Does the short-list represent an appropriate level of ambition given the energy potential of the Estuary?	No, the ambition should be to balance the energy potential of the estuary, investment in developing clean technology, the value of the ecological system and its wildlife, maximising energy production over the 12.5 hour tidal cycle (which includes wind and wave power), minimise the carbon expended in construction, minimise the negative impact on local communities and maximise the positive impacts for the whole country.

Consultation questions		Suggested responses
18	Are there any other schemes that, in your view, should be shortlisted? Please provide appropriate evidence wherever possible and refer to the short-listing criteria.	The tidal stream and tidal fence technologies are worthy of further consideration. They were discounted because they are not yet tested at such a large scale, and because they are not tidal range options. The tidal range is an obvious (and very large) plus point, but we should not discount other options simply on the basis that they don't use any, or all, of the tidal range.
18	Are there any other schemes that, in your view, should be shortlisted? Please provide appropriate evidence wherever possible and refer to the short-listing criteria.	Need a genuine consideration of all options rather than resorting to a barrage. There seems to be doubt about the commercial viability of all the shortlisted options. The new technologies should be included at this stage as they may prove to be the viable option.
Strategic Environmental Assessment		
19	Which plans, programmes or environmental protection objectives are most significant for this strategic-level environmental assessment?	The effect on wildlife (both terrestrial and marine) and ecology systems is of paramount importance.
20	Is there any additional information that could help supplement the baseline data? Any further information relating to the baseline indicators, existing problems and trends over time would be very useful.	It is important to ensure that the considerable uncertainties regarding the impact on living systems is highlighted. Given the potential for irreversible and catastrophic impact on species, we suggest that these uncertainties are weighed as 'worst case' scenarios.
21	Is there any important information that has not been addressed in view of the SEA scope?	The effect on the water table (ie freshwater) of reduced tidal range. Increased salinity of groundwater for a considerable distance inland is possible; this would affect farming. Is it certain that compensatory habitat can be provided? The quantum may be available in some location but it may not be practicable in terms of the system relating to the species (eg relocation may not be an option for some species; eg the location of feeding grounds along migration routes is critical in terms of the whole journey).
22	Is the range of environmental problems, issues and receptors covered appropriate? Is the level of receptor sensitivity appropriate?	

Consultation questions		Suggested responses
23	Is the methodology proposed appropriate for this strategic-level environmental assessment?	
24	Are there any major plans or projects that should be included in the assessment of cumulative effects?	
25	Are there any changes that should be made to the proposed SEA objectives; including any consolidation of the objectives? Are there any other SEA objectives, assessment criteria or indicators that should be included?	
26	Are the relevant aspects of sustainable development covered, if the SEA addresses the issues identified in this SEA Scoping Report?	
27	Any further suggestions regarding the scope of the SEA and its proposed assessment of the shortlisted options?	
Next Steps		
28	Do you agree with the work plan, as outlined in Chapter 6 (p75)? If not please specify any other areas to be studied.	

Economic Impact questions and comments

(from DECC workshop held on 16 March for officers and portfolio holders from each district/borough in Somerset and officers from a number of other relevant organisations)

SEA

- SEA must address the cumulative effects and secondary affects of the options.
- Still gaps in SEA process re habitats and migratory data for species. Danger of still not being answers at the end of the consultation process (SCC doing an appropriate assessment and has identified some gaps).
- What about the showstoppers? Need more information on environmental legislation, designations, etc.
- Sea level rises through natural causes will change habitats. How can this be replaced/displaced if no development occurred?
- Modelling has not identified whether high tide will be lower downstream of barrage.
- Are there any downstream effects – on coastal processes especially? Wave reflection of a barrier?
- What are the options around low level river discharges e.g. the Brue, the Axe and King Sedgemoor's Drain?
- Waste - is it being considered? Potential impact on disposal sites in Somerset.

Resources

- Do not take material from the Mendips.
- Engagement – More time is needed. Committees and officer groups should have a whole day session like today.

Designated Sites

- SPAs, site of community importance (RAMSAR, SSSIS). What is the position on this legislation?

Sedimentation

- Have sedimentation rates been factored into the SEA?
- Siltation is less of an issue further downstream of the Severn Estuary. Currently the main area of channel is dredged so has no deposits. Reduction in flow will cause some deposition occurring but no build-up behind the barrage over time
- Some existing flood defences e.g. mud banks will be permanently immersed in water upstream of the barrage. Not designed for continuous immersion and could result in defences being reduced to mud slurry and therefore no longer effective.

Decommissioning

- What are the flooding implications after decommissioning? What are other implications – waste, etc.

Engagement

- Needs to be channel of communication to maintain confidence and trust in the process.
- An Issues Newsletter to allow feedback.
- Should Somerset CC and all Unitary Authorities take the co-ordinating lead with Parish Councils – geographic based – concentrate on those LAs/Parishes likely to be affected by barrages/lagoons?

- Detailed analysis at the “local level” will not be possible at the Regional/Strategic level but will have to be devolved to specific groups.
- Technical input rather than political from local authorities.
- Use GOSW and SWRDA to help with invitee attendee for technical workshops. The County Council should also help with this.
- Should be one nominated in each authority co-ordinating input/responses/advice to STP team.
- Is there a need to bring Welsh and SW representatives together?

Public Consultation

- Difficult to convey complex matters to the public – needs more thought.
- Look to nuclear – can this be utilised for Severn Tidal Power (or similar model)?

Strategic Environmental Assessment (SEA): Scoping issues

(from DECC workshop held on 16 March for officers and portfolio holders from each district/borough in Somerset and officers from a number of other relevant organisations)

Tourism

- Has full account of negative tourism impacts e.g. bird watchers.
- The figures in the presentation don't look right, what data is behind these figures?
- Economic effects on caravan parks (both sides of the estuary).
- Increased potential for recreational use of estuary?

Ports

- If goods cannot be brought into the region by sea, will this mean an increase in road/rail transport in the region? Need to understand the potential impact on the roads.

Construction Materials

- There are 2 large quarries in the region. If materials are brought in from Scottish super quarries, then Somerset will see no benefit. Materials from Somerset quarries may bring a job benefit but have environmental effects. Important to get the balance right.
- Infrastructure requirements – where will the resources come from?

Skills

- What sort of jobs will be created?
- Are they long-term high value jobs?
- We must be careful not to undervalue lower skilled jobs in the local economy.
- The skills available and training needs within the region need to be understood.

Stage 2

- Stage 2 needs to look at the housing of migrant workers:
 - The impact this will have on economy/services
 - The impacts of workers leaving after construction and the effect on the economy.
- Supply chain issues:
 - How to maintain the benefit?
 - What happens to the skills and resources after construction?
- Stage 2 should map out other major projects happening in the region and the timeline against which they are operating.

Economics

- What economic assumptions underlie the study?
- Are the economic assumptions still valid?
- The scale of the economic analysis is too bland/general as it is only at a regional level. There should be a distinction between areas directly impacted (south of M4 west/north of M5) and those that are more peripheral (e.g. what is real benefit/impact for places like Holyhead, Wrexham, Aberystwyth, Bournemouth, Swindon and Penzance?)
- Sectoral analysis not covered in detail regarding impacts e.g. where are the construction workers going to come from?

- Economic impact of flooding and consequential impact/cost of development e.g. need for upgrading of sea defences upstream/downstream of development.

Engagement

- More!
 - More time
 - More sharing to information
- Make use and engage with local strategic partnerships
- Use existing partnerships

Flooding

- Does the project fully and transparently capture all costs (e.g. flood protection, the cost of having to pump rivers it keeps tide locked etc)?
- In combination effects of potential new nuclear build and Hinkley Point and Severn Tidal Power need to be considered.
- Maximise the benefits for Somerset.
- Understand the effects on the national grid and supply lines in the area.
- Absence of detail in relation to other known development projects that are known to be taking place (e.g. Hinkley Point, Bristol Port).

General Comments

- Does the scheme fully and transparently capture all costs e.g. flood protection?
- Strategic planning needs to be integrated into the plans for this project – especially with respect to supply chains and legacy.
- The impact on fisheries is down played – the heritage of fishing is very important in the estuary. It shouldn't just be about job figures.
- How well are the various work streams 'talking' to each other? There is a need for each to inform and be informed by each other as appropriate.
- Need for clarity as to impact of development at points of landfall and existing infrastructure (+ cost of upgrading to cope with development legacy costs).
- Many consequential impacts cannot be quantified.
- Power and water infrastructure requirements – economic effects and implications for the customer
- Consider lesson learnt from Hinkley – what failed and what worked?
- The impact of grid strengthening, in combination with 'Hinkley C'.
- Ecosystem valuation – when, how, will these impact on studies?
- Is there a Severn-wide positive vision for sustainable development and what is the impact on this vision?
- Impacts on Wales and South West England should be considered as separate places.
- Question of ambiguity on economic impact and figures generated.
- Issue of establishing data here and now rather than incorporating projections of proposed projects e.g. expansion of Bristol Port Deep Water Terminal (assumptions built on assumptions exposes weaknesses if progress not implemented).