

REPORT ON A PUBLIC FORUM

A SEVERN BARRAGE OR WHAT?

Options for Renewable Energy from the Severn Estuary

hosted at the

Holland House Hotel, Cardiff; Wednesday 8th April 2009

**RSA Wales and Western Region with the endorsement of ARUP,
The British Science Association, Cardiff School of Management UWIC,
Cardiff University, Halcrow, Hyder, The Institution of Civil Engineers Wales,
The Institute of Directors, The Institute of Welsh Affairs,
The Welsh Livery Guild and The World Wildlife Fund Cymru**

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ARUP, Halcrow, Hyder, and RSA

**THE VIEWS REPORTED HERE ARE COMPILED ENTIRELY FROM THE
FEEDBACK FORMS LEFT BY MEMBERS OF THE PUBLIC PRESENT AT THE
FORUM AND DO NOT NECESSARILY REPRESENT THOSE OF THE
ORGANISATIONS SUPPORTING THE FORUM**

1. OBJECTIVES AND CONTEXT

This Public Forum aimed to provide a neutral space for members of the public to consider the evidence and to develop their own informed opinions on the strengths and weaknesses of various options which the Department of Energy and Climate Change is examining to exploit the tidal energy of the Severn Estuary. The Public Forum coincided with the Severn Tidal Power Phase One Consultation undertaken by DECC which finishes 23rd April.

(http://severntidalpowerconsultation.decc.gov.uk/feasibility_study_overview)

A first Public Forum was organised in Bristol on 7 March, outcomes from which have been fed to the DECC Consultation. Further information, Dr Eric Albone, FRSA, albone@dial.pipex.com or visit www.rsawaw.org.

2. PROGRAMME

2.1 Presentations.

Following a welcome from **Dr Eric Albone**, FRSA, Chair RSA Wales and Western Region and Member of Council, British Science Association, and **Rudi Plaut** CBE, FRSA, who chaired the Forum, the following 15 minute background presentations were made. This report together with Powerpoint slides of these presentations will be posted on the RSA Wales and Western Region website, www.rsawaw.org.

- **Overview of Severn Tidal Power Options**
James Colcombe, Severn Tidal Power SEA Manager, Parsons Brinckerhoff
- **Severn Barrage and Other Options; the Hydro-Environmental Impact**
Prof Roger Falconer FRSA, Halcrow Professor of Water Management, School of Engineering, Cardiff University
- **Tidal Power in the Severn; can we maximise output while minimising risks & impacts?**
Morgan Parry, Head, WWF Cymru
- **Severn Tidal Power; the Environmental Unknowns**
Michael Evans, Policy and Strategy Manager-Climate Change, Environment Agency Wales
- **Economic Benefits of the Severn Barrage**
Prof Brian Morgan, Professor of Entrepreneurship, University of Wales Institute, Cardiff

2.2 Questions and Open Discussion

The Presentations were followed by 50 minutes Open Discussion and the evening ended with a buffet supper over which informal discussion continued and during which members of the public were invited to complete their "Your Opinion" feedback forms. Section 3 below presents a compilation of the views expressed. It is clearly the case that further public engagement is much needed in this area. Apart from this, we prefer the comments made the people present to speak for themselves.

About 180 people were present and 74 "Your Opinion" forms were handed in at the end of the Forum; Participants were aware their views would be forwarded to the DECC Public Consultation

3. "YOUR OPINION" COMPILATION OF VIEWS OF PARTICIPANTS' FEEDBACK FORMS

3.1 Should we harness the Tidal Energy from the Severn Estuary?

63 Yes 6 No 5 Undecided

one No response added "based on M Evans assessment and uncertainty and time available to act"

3.2. If Yes to question to Q1 do you favour a Barrage

40 Yes 13 No, 10 Undecided

If Yes tick if you favour

27 Cardiff Weston Barrage

1 Shoots Barrage

0 Beachley Barrage

10 some other/undecided

3.3 If Yes to question to Q1 do you favour a Lagoon

3 Yes 51 No 8 Undecided

3.4 If Yes to question to Q1 do you favour some other technology

23 Yes 17 No, 15 Undecided

If Yes, please say what it is

1. tidal reef
2. turbine and wind farm
3. not sufficiently well informed to make suitable comment
4. the tidal reef scheme; it is cheaper, less damaging and generates more power than the Cardiff Weston barrage
5. tidal fence; any barrage would just limit access to Severn gateway
6. tidal stream and tidal fences
7. vertical turbine
8. tidal flow turbine as in Strangford Loch
9. need closer analysis of other tidal options eg fences, reefs, lagoons in centre of estuary (not linked to coast)
10. tidal reef and nuclear!
11. tidal reef or tidal stream
12. modular turbines because they could be moved and improved
13. tidal reefs
14. tidal stream
15. continue to develop new technologies which may well become economically and environmentally more valuable in the future
16. the one that has a low head and does not cause significant damage to biodiversity
17. tidal reef or fence
18. combined tidal barrage and tidal fence or tidal barrage incorporating tidal fence technology
19. in conjunction with the barrage

20. tidal fence
21. mix of turbine (wind and hydro) and hydro-power modular units
22. need to develop flexible options
23. most important, develop nuclear first

3.5 What aspect of the various schemes is most important to you or gives you most concern?

1. environmental impact (fish passage, intertidal habitat, internationally important bird numbers, etc)
2. how it fits in with overall energy policy and carbon reduction strategy
3. I want to be sure that the benefits of any of the schemes will outweigh the negatives- hard evidence is essential
4. the large financial investment that could potentially be better spent elsewhere both in terms of new infrastructure and research into new technologies
5. ensuring that the solutions developed do not place too strong a focus on satisfying environmental objections
6. Cardiff Weston Barrage- worried about lack of flexibility of design when technology improves in the future; the economic case as presented by Morgan is incoherent, inaccurate and could have come from the early 80s
7. ensure continued port operation in Bristol
8. control of capital costs; environmental impact; impact of construction on local communities
9. we need to keep up with innovations as they come on line
10. silting-sewage; fish migration; further road crossing?
11. provision of sufficient future energy source- renewable
12. the creation of a Severnside economic hub bringing employment, prosperity and sustainability to the region
13. most energy for best cost; also have some environmental concerns
14. short termism; adaptability and flexibility
15. effects on designated sites and loss of intertidal habitats; mitigation will never replace these; sediment transport and coastal processes
16. the environmental aspect/impact and the disregard of more environmentally friendly tidal options
17. the balance from energy gained and amenity lost; what will happen to the existing ports which are essential to allow to grow in the future, passage of ships is not compatible with rail road links
18. renewable energy plus job creation and regeneration of South Wales valleys in which regards the Cardiff-Weston barrage comes out very much on top
19. the impact and implications for ports and commercial shipping in the upper Severn Estuary- especially the size of the shipping lock
20. environmental damage; lack of numbers; no carbon footprint from cradle to grave
21. impact on wildlife
22. security of electricity supply; dependence on nuclear is not sustainable nor desirable because of uncertain disposal options for waste
23. lack of attention to the potential for "ancillary investment"
24. economic regeneration and reduction of CO2
25. not convinced that flooding, sewage, sediment, environmental damage sufficiently assessed
26. can it be delivered?- water quality behind barrage- impact on birds and fish
27. be bold; avoid small non-upgradable schemes
28. uncertainty and risk; lots of work needs to be done
29. water quality – impact on current discharges
30. low carbon electrical energy generation
31. balancing reduction of energy usage against sustainable renewable energy whilst taking into consideration environmental concerns. Job creation should be a side benefit, not a driving force

32. long term sustainability and improvement of technologies given so many unknowns
33. the scheme should provide the maximum possible amount of green energy
34. ecological impacts with uncertainty of costs and benefits
35. flood prevention
36. cost effectiveness; realism; economic benefits
37. impact on the environment in the construction stage; long term effects can probably be controlled
38. buildability and financeability
39. environmental impact
40. the time span to complete such a project in time for 2020 CO2 targets
41. art, culture, heritage; loss of the highest tidal range in the world
42. economic benefit to area; clearer water is a big bonus- massive water sports opportunity- less chance of flooding
43. most important to take action in reducing carbon as quickly as possible
44. with increasing demand all types of generation will be necessary
45. flood risks and drainage impact on adjoining areas
46. damage to biodiversity
47. can produce early results; use technology that can be duplicated elsewhere around the UK coast
48. environmental impact vs economic outcome
49. environmental impact, maximum energy output; environmental consideration throughout each stage of the project not just an afterthought upon completion
50. scheme must provide the largest scale project with a high generating capacity at reasonable cost
51. the poor quality of the evidence being offered by those who should be informing judgement
52. believe the aim should be maximal power generation; the environment will change; we should plan for this to ensure the best possible new environment is created; the benefit of high environmental spend will be tourism
53. environmental but we can manage change; global warming if/when it occurs will be managed
54. CO2 in construction phase and payback; migrating fish; migrating birds
55. environmental habitat loss
56. impact on commercial shipping through Avonmouth and Sharpness
57. total environmental issues
58. their impact on conventional power generators which will still be needed to fill in energy gaps
59. environmental impact and value for money
60. maximum energy generation potential
61. inflexibility of a barrage/lagoon option; need for more public debate; importance of immediate energy security
62. balancing national energy priorities versus national environmental priorities
63. the contradictory assertions make it clear that we do not know enough to be 90% sure of being right, so it is essential that whichever scheme is chosen is impermanent and can be modified in the light of practical experience; the fence seems most likely
64. we appear to be rushing towards selection of one alternative (Cardiff Weston barrage) and not researching other newer alternatives, for a project with a 120 year life.

3.6 What aspect of the various schemes most needs further investigation/ information?

1. likely effects of each scheme on the environment based on current evidence; identification of areas where future research is required to make an informed decision

2. consolidation of the basic information for the public/us
3. I would like to see a direct comparison between the Severn Estuary options and other technologies, such as nuclear, undertaken
4. understanding those impacts
5. all the environmental unknowns
6. effects on biodiversity
7. risk of capital cost overruns to be the identified; upscale potential for selling carbon permits
8. sediment
9. effect on wildlife habitats- ability of birds/fish to adapt to change
10. government commitment to guarantee scheme and fair trade development
11. all the environmental impacts and the “true” cost; economic gains v obvious economic losses
12. subsequent enhancability
13. the impacts on the environment including coastal processes; impacts on port infrastructure and addressing many of the other unknowns; also re investigating other more suitable tidal options
14. EU legislation will need to be changed to allow a significant barrage; this could take years unless the way EU legislation is made/amended changes to be more flexible
15. opportunities for exploiting Cardiff docks including reclamation of the foreshore provide cargo/container storage
16. the impact and implications for ports and commercial shipping in the upper Severn Estuary- especially the size of the shipping lock
17. environmental damage; lack of numbers; no carbon footprint from cradle to grave
18. tidal flow power unit output can be increased and should not be discounted in the short term given long term construction of any barrage
19. understand effects of climate change on indigenous species in the estuary
20. ancillary investment; economic leakage
21. the high cost of lagoons and the fish problem
22. environmental damage
23. economic benefits- regeneration opportunities
24. funding – not a PFI!
25. fish migration
26. tidal reef and tidal steam technologies
27. further modelling of tidal lagoon
28. how well the energy generation will be tied into the distribution grid and what additional cost will be incurred
29. I've read that the flow of the Severn could reduce dramatically by 2050 due to the climate crisis. Will this affect the viability of a barrage?
30. tidal reef
31. costs of construction; timescale of construction
32. capital costs; further damage to Severn environment if Cardiff-Weston barrage isn't built
33. economic/transport benefits
34. tidal reef, economics
35. it was disappointing that the EA and WWF accepted that we are less than knowledgeable about a range of natural fauna; it would seem that those groups will never have sufficient data. We need to make decisions on what data are now available
36. a transparent weighting system for the pros and cons
37. environmental impact- but time limited
38. other technologies need more time to investigate
39. alternative energy resource
40. silt build up
41. whether to use ebb only or ebb/flow turbines

42. funding feasibility given current PSBR issues and need for public sector underwriting and long term impact of “credit crunch” 5+ year
43. everything; we need more data and less opinion
44. fish kill
45. environmental impact vs economic outcome
46. the lifespan of the barrage; the effect on the sediments on the barrage structure; impact on the reduction of tidal range
47. it seems the short list options are too limited; need much more investigation of emerging technology even at the cost of delay of the scheme
48. costings are suspect; they are unpublished; tsunami
49. more work on tidal fence/reef technologies that would cause less habitat damage
50. impacts on commercial shipping and port operations; impact on Severn bore
51. spin off, eg transport links across barrages ; what are energy balances- input and output.
52. environmental impact overall and migratory fish in particular; costs compared with alternatives (cost of construction, cost of running, interest payments etc) and maintenance
53. public engagement
54. tidal fence/reef

3.7 How would you rate today's Forum?

29 Excellent 35 Good 7Moderate Value 1Poor 0 Very Poor

Add any comment- what you found valuable/what we could do better

1. more time for questions
2. provide a rep from government
3. I have not gained any extra knowledge I did not already possess. I felt a number of the presentations were heavily biased and did not give a balanced view of the schemes. I was hoping to see a series of facts based upon evidence from which I could form my own opinion and I do not feel this was achieved.
4. more speakers needed to inform and balance some bias viewpoints
5. needed more time; maybe drop the late coffee break
6. microphones to be switched on for panellists; less talks but beefier/more factual ones
7. keep debate going to a conclusion soonest
8. great to get people thinking
9. speakers did not make best use of microphones; could not hear some of the questions
10. four good speakers; one needs replacing. All needed better volume or amplification; speakers need to learn to address 200, not just chat
11. overall well presented but lacked much detail
12. saving energy needs a huge step change in public opinion/overcoming apathy/ a generation via education
13. have another one to include impact and implications for ports in upper Severn estuary.
14. pity the document I ordered from DECC some weeks ago still has not arrived
15. sound – could not hear panel
16. ask speakers to base arguments on evidence; most did, but one based arguments on knee-jerk reactionary points which serve only to divert this process not find the best solution
17. context of how much other technologies provide- nuclear issue- how much that cost and delivers- how many coal/gas plants to provide 5% national energy
18. fewer speakers; more time for each?
19. too much biased advocacy; a poor substitute for careful analysis, particularly on the so called economics

20. a whole day really needed! Would have appreciated much more detailed presentations
21. please could they be persuaded to use microphones
22. slide shows available on line
23. environmental assessments, particularly considering whether a changed habitat etc might be an improvement
24. need for real discussion; question and answer session is not enough; good thought provoking but only the start
25. longer forum, at least one day

3.8 Add other comments you wish

1. the barrage is only justified in its benefit in helping the UK meet its renewable targets, The latter are only a means to reduce carbon emissions. Nuclear power does not produce emissions and should therefore be weighed against the barrages in terms of power/kWh
2. Severn Tidal Power is an expensive and risky prospect; we need a more immediate solution 1) cost effective measures to reduce electricity consumption and fuel saving 2) reliable power generation, probably nuclear
3. I am firmly in favour of the Cardiff-Weston barrage for the following reasons * the amount of energy generated vis a vis cost/risk is acceptable within our current climate change context * new environmental benefits will emerge which will balance out any losses of habitat * the economic benefits to the whole area will be significant and likely to be lasting * reduced flood risk for coastal areas currently significantly at risk.
4. Agree that this is a 21st century “coalfield”; believe in a vision for the region as the centre for green power (including nuclear!); must do all we can to create a beautiful new environment; this will cost a lot but will repay directly in tourism and indirectly in increased attractiveness of region
5. this debate has highlighted the bigger question of nuclear v barrage. I should like to see the cost/benefits of nuclear v barrage
6. Severn tidal energy only delays the crunch if energy demands continue to rise. Need to think through beyond the current issue to long term sustainability now. Is this politically possible?
7. Excellent forum; excellent speakers. Good question/answers session but more about policy, money and fish! I would have liked more on the unique problems of the Severn. I speak as a sail-boat racer from Barry and a civil engineer with practical experience of working in the tidal waters at Uskmouth and Cardiff. A very good evening.

3.9 If you wish to keep in touch please give your contact details here

(41 people left their contact details)