

DTI Consultation on the 2006 Energy Review

Our Energy Challenge – Securing clean, affordable energy for the long-term

Addendum to the Submission by the Royal Society for the Protection of Birds

Severn Barrage

The RSPB has already submitted a response to the DTI consultation on the 2006 Energy Review. However, we have thought it necessary to submit this addendum to the earlier response, for the reasons set out below.

Summary

The Welsh Assembly Government (WAG) submitted a Memorandum for Energy Policy in Wales to the DTI on 24 April 2006, in which it set out its energy policy strategic themes for Wales. Included under the heading “Key Wales Options”, WAG revived the long-standing proposal for a tidal electricity-generating barrage across the Severn Estuary, and has suggested that it is now ‘appropriate to re-examine the Severn Barrage proposals in depth’.

Electricity generation from tidal barrage technology is not considered in *Our Energy Challenge* and, hence, was not referred to in the RSPB’s original submission. However, we have significant reservations about the proposal for a Severn barrage, and would ask that our further submission on this specific scheme be considered.

The concerns of the RSPB can be summarised as follows:

- The likely major negative impacts of a proposed Severn barrage on the natural environment and ecology of the Severn Estuary. A barrage would have a very serious impact upon sites of international importance for birds and other wildlife, including sites protected under EU environmental legislation.
- Construction of the Barrage would be damaging and disruptive to the environment of the Estuary and embody a significant amount of carbon.
- Both the cost of construction and the cost of renewable electricity from the Barrage are likely to be significantly higher than the cost of readily available alternative sources.

The RSPB does not share WAG’s view, that a re-examination of the Severn Barrage is now appropriate. We believe the available evidence to be so heavily weighted against the Severn Barrage, that there is nothing to be gained from such re-examination. The 2003 Energy White Paper concluded in relation to a Severn barrage that ‘such schemes have a very substantial impact on the local and regional environment and are very expensive’. We do not believe that anything has significantly changed since 2003 to justify a new review.

We reiterate our continued view, expressed in our original submission, that the 2003 White Paper gave a clear, well-researched view of the way forward to achieving the UK’s long term greenhouse gas emission reduction target, especially the need to focus on a prioritised hierarchy

of energy conservation, energy efficiency, and renewable sources of supply. Whilst a Severn Barrage would generate renewable energy, it is unlikely to do so at a cost that would be competitive with other forms of renewables or energy efficiency and conservation measures, whilst also being far more damaging to an estuary of international environmental significance.

The Severn Barrage – Description (from the Severn Tidal Power Group Report of 2002 – *The Severn Barrage – Definition Study for a New Appraisal of the Project*)

The Severn Estuary is unique in Europe, with a tidal range of more than 12.5 metres, the second largest in the world after the Bay of Fundy in Nova Scotia. A Severn barrage would seek to exploit this tidal range as a source of electricity generation.

The proposed barrage would stretch 10 miles, from Lavernock Point near Cardiff to Brean Down near Weston-super-Mare, impounding an area of 185 square miles. Aggregates required are estimated at 13 million tonnes, and the Severn Barrage is said to have a minimum design life of 120 years. The likelihood is that aggregates would need to be transported by sea from north Wales to the Severn Estuary. In addition, steel caissons would need to be constructed and shipped to the Estuary, possibly in some cases from Norway. The time from planning approval to completion has been estimated at seven years.

The passage of shipping to and from the major ports of Bristol, Newport and Cardiff would be an issue, with locks needed that would be able to accommodate vessels up to 250,000dwt.

Ebb-flow generation has been recommended, with the possible addition, if required, of a pumped storage capacity upstream of the Barrage.

Environmental Impacts and Concerns

General

The Severn Estuary is of international importance for wildlife, including waterfowl, migratory fish, invertebrates and plants. It encompasses riverine, estuarine and inter-tidal habitats and includes important geo-morphological features.

The RSPB is concerned that construction of a traditional barrage in the proposed location would have an irreversible and serious adverse impact on the wildlife of the Estuary. The Barrage would have a direct impact on four sites protected or identified for protection under European conservation legislation: the Severn Estuary Special Protection Area and possible Special Area of Conservation, and the rivers Wye and Usk candidate SACs. Once destroyed, this huge natural asset could not be recreated.

Moreover, the RSPB fears that construction of a Barrage may also facilitate further development on land upstream that would damage protected wildlife sites.

We are also concerned about the considerable wider environmental impacts associated with construction of a traditional barrage, including sourcing of the construction materials and CO₂ emissions associated with its construction and with the production, transportation and use of construction materials, such as steel and cement.

Birds

The Severn Estuary currently accommodates an annual average of around 65,000 internationally important water-birds. Important species present include: Bewick's swan, curlew, dunlin, pintail, redshank and shelduck. A tidal barrage reduces the tidal range in an estuary, and hence the inter-tidal area available for feeding birds, while also reducing the exposure time of the remaining inter-tidal areas, due to increased high-water stand. At barrage closure, considerable numbers of birds are likely to be displaced. Changes in the sediment regime are also likely to affect the extent and persistence of saltmarsh, leading to dehydration or conversion to freshwater marsh.

Birds displaced at the time of closure of the proposed barrage are likely to suffer reduced over-winter survival, notably in the case of immature birds. If shortage of food is particularly acute, for example because closure coincides with low availability of prey species, large-scale mortality could result, with subsequent recovery taking many years. Displacement of redshank, following closure of the Cardiff Bay amenity barrage, led to reduced survival for at least three years, possibly because these birds were placed at a competitive disadvantage to the resident species at the receptor site. Moreover, there could be more subtle effects, for example reduced breeding productivity caused by poorer condition at the end of the winter.

Legislative and Planning Context

Governments in both England and Wales are committed to sustainable development, for which one key objective is the protection and enhancement of biodiversity. The designation of the Severn under the EU Birds and Habitats Directives imposes a series of stringent tests upon any proposed developments, and helps to ensure their sustainability in accordance with this and other policy objectives.

In summary, an appropriate assessment would have to be carried out to establish whether construction of a barrage would have an adverse impact upon the qualifying wildlife interest of the Estuary. If, as we believe, it were to conclude that such a project would indeed have an adverse impact, then the project could only proceed if it could be shown that there were no alternative solutions and that there were imperative reasons of over-riding public interest for it.

We believe it would be straightforward to demonstrate the availability of a range of alternative energy sources and for reductions in carbon emissions, including various emission-free and low-emission generation technologies, together with demand-management approaches involving efficiency and conservation measures. These would be unlikely to impact upon Natura 2000 sites. We do not believe, therefore, that there are no alternatives, or that over-riding public interest could be demonstrated.

In the unlikely event that these tests were considered to have been passed, compensatory habitat would have to be provided in order to maintain the coherence of the Natura 2000 network. Notwithstanding the irreplaceability of the ecosystem as a whole, we believe that this last requirement is likely to prove especially difficult to meet in the context of the Severn, especially in finding a sufficient area of land available for creation of habitat of a suitable type.

We consider it unfortunate that the WAG Memorandum for Energy Policy in Wales presents European environmental legislation as an unwelcome constraint: '...the construction of any

barrage would require overcoming some very significant European Commission driven environmental legislation constraints'. We consider it entirely appropriate that economic development should be tempered by legislation to conserve a shared resource such as migratory wildlife, and that one nation should not gain an economic advantage over another by permitting significant environmental damage.

Energy Policy and Climate Change Considerations

The 2002 STPG report suggested that capital costs would fall in the range £10 to £14 billion. More recent assessments have suggested a figure of at least £15 billion (cf the WAG suggested cost of £10 billion pounds upwards). Moreover, it is noteworthy in this context that there is a tendency for major infrastructure projects to incur significant cost overruns (eg Channel Tunnel 108%; Channel Tunnel Rail Link 93%; Jubilee Line Extension 67%), so it is quite likely that the estimated construction and implementation costs for the Barrage would be exceeded.

The installed generating capacity of the Barrage suggested in the 2002 report was 8.64 GW, with a projected output of 17 TWh per year, or around 4.2% of total electricity demand in 2004.¹ The carbon emission saving suggested in the 2002 report was around 3% of the UK level if displacing coal-fire generation and 2% if displacing gas.

Whilst we would require further details of the scheme currently proposed to make a reliable estimate, it appears that its benefits in terms of renewable energy generation, and hence climate change mitigation, are unlikely to be justified by the financial costs. At this level of initial investment, electricity generation from the Barrage is unlikely to be competitive with other forms of renewable generation that are nearer to market. Indeed, were the scheme clearly competitive in terms of cost then the Renewables Obligation would support it.

As in the case of nuclear energy, we can see no economic or environmental justification for spending large sums of public money, or introducing new support measures, to provide additional low carbon generation that can be provided more cheaply by other means that are readily available now.

¹ Digest of UK Energy Statistics 2005, DTI, 2005.