THE POTENTIAL IMPACTS OF A SEVERN BARRAGE ON THE WILDLIFE OF THE SEVERN ESTUARY
AN ENGLISH NATURE POSITION STATEMENT

Executive summary

- The Severn Estuary has nature conservation features of national, European and international significance.
- A tidal barrage structure would inevitably change the nature of the estuary and the physical processes that drive it.
- There must therefore be absolute clarity that any proposals for a tidal barrage across the Severn Estuary would be accompanied by significant environmental impacts.
- These impacts will need to be studied in considerable detail before the full range of implications can be placed before the competent authorities.
- As a consequence, we believe it is important to give careful thought to the scale of work required to meet modern Environmental Impact Assessment legislation and the demands of the Habitats and Water Framework Directives. These processes will place a heavy burden on the regulatory regime with no certainty that an environmentally acceptable solution can be found.

Background

Proposals for a barrage across the Severn Estuary have been in existence (for decades) (since the 1970s), and from time-to-time re-enter the debate on the best ways of supplying Great Britain’s energy needs whilst meeting commitments to reduce greenhouse gas emissions. Similar proposals have also been advocated for the Mersey and the Humber Estuaries, but those for the Severn have attained a higher profile and are regularly revived.

The Severn Estuary is seen as a strong candidate for the development of a tidal barrage because of its almost unique tidal range. The implications for estuarine wildlife were given careful consideration when the Severn Barrage was considered in detail the late 1980s. Since then, wildlife conservation legislation has been strengthened and the Severn Estuary is designated as a Special Protection Area under the EC Birds Directive (79/409/EEC). It is also under consideration as a possible Special Area of Conservation (pSAC) under the Habitats Directive (92/43/EEC), and the rivers Wye and Usk, that feed the estuary are classified as SACs under the same legislation. Together, SPAs and SACs form a pan-European network of protected sites referred to as Natura 2000. In addition, the Estuary is listed as a Ramsar Site under the Ramsar Convention on the protection of wetlands of international importance.

The special wildlife interest

The Severn Estuary is a hyper-tidal estuary that exhibits the second largest tidal range (>12.5 metres) in the world (after the Bay of Fundy). This makes it almost unique in a world sense and quite unique in European terms. A consequence of these features is that the estuary displays physical and biological characteristics that are of considerable importance. For example, it supports sub-tidal reefs of the reef-building worm *Sabellaria alveolata* that more normally occurs only on inter-tidal surfaces.

The location of the Severn Estuary on the north-Atlantic flyway for migratory waterfowl means that its mudflats and saltmarshes provide feeding grounds for very high numbers of
wildfowl and waders throughout the winter period. The estuary can therefore be described as one of the key re-fuelling stations for migratory waterfowl, a feature common to all of the largest English and Welsh estuaries and made possible by the proximity of Great Britain to the Gulf Stream which means that expanses of tidal mud are free of ice throughout the winter.

The bird interest includes internationally important populations of Birds Directive Annex 1 species (Bewicks swan), and of five regularly occurring migratory bird species (shelduck, dunlin, redshank, European white-fronted goose and gadwall); and an internationally important assemblage of wintering waterfowl (judged as 20,000 or more wildfowl and waders). The estuary is ranked amongst the top 20 sites (ranked 16th in the season 2000-2001) for absolute numbers of waterfowl and is the foremost UK site for European white-fronted goose.

The Severn Estuary is also of considerable importance for the range of migratory fish that pass through its waters on their way to freshwater spawning sites in the Rivers Usk and Wye, and for their juvenile stages that return to sea. These fish include the shads (Allis Alosa alosa and Twaites Allosa fallax), sea lamprey Petromyzon marinus and river lamprey Lampetra fluviatilis and salmon Salmo salar. Both shads and lampreys are listed under Annex II of the Habitats Directive amongst those species in need of higher levels of protection, hence the designation of the Rivers Usk and Wye as SAC. In addition, the migration of eel (Anguilla anguilla) is a major feature of this estuary.

The saltmarshes of the Severn Estuary are important in the context of bird feeding, roosting and loafing, but are also significant in their own right. This interest is not simply confined to the vegetation type and floral composition; the saltmarshes of the Severn Estuary are terraced, which is a highly unusual morphology in its own right (similar characteristics are exhibited on parts of the Solway Estuary). Additionally, and bearing in mind the serious declines in the extent and condition of saltmarshes in eastern England, those in the Severn Estuary make an important contribution both to range and variation as well as to the maintenance of extent across the UK.

Implications of a proposed barrage

Existing proposals for a Severn Tidal Barrage indicate that it would comprise a structure some 12 km long, stretching from Brean Down to Lavernock Point. Such a structure would inevitably change the nature of the estuary and the physical processes that drive it. This is recognised in recent publications which state that “within the basin formed by the barrage the hyper-tidal nature of the estuary would alter significantly and no measures to compensate for the loss of this particular feature could be engineered”. There must therefore be absolute clarity that any proposals for a tidal barrage across the Severn Estuary would be accompanied by significant environmental concerns. In terms of the wildlife interest, the proposals would need to be evaluated against the provisions of the Habitats Directive 92/43/EEC and its transposition into UK law through the Conservation (Natural Habitats &c.) 1994, better known as the Habitats Regulations.

The proposals are of such a scale that we believe it would be impossible not to conclude that they would have an adverse affect on the integrity of the Natura 2000 interest. Such judgements may, however, appear to be premature, as the Habitats Directive and Habitats

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1 The Severn Barrage- Definition Study for a New Appraisal of the Project- January 2002, ETSU Report No. T/09/00212/00/REP.
Regulations provide a clear process whereby the wildlife impacts of proposals affecting Natura 2000 sites can be evaluated. This is a three stage process:

- Are the proposals of such a magnitude as it might reasonably be expected that there will be an effect? This is a very coarse filter and there can be no doubt that a proposed barrage would have such an effect (referred to as a “likely significant effect”).
- Are the proposals of such a magnitude that it cannot be concluded that there will not be an adverse affect on the special wildlife interest, or is it absolutely clear that there will be deleterious effects? This is a precautionary approach and if this test is passed, damaging projects cannot proceed without clear justification and agreement by Secretary of State on the grounds of imperative reasons of over-riding public interest.
- In the event that a damaging proposal is deemed to be of sufficient importance to justify progression (for imperative reasons of over-riding public interest), measures must be secured to maintain the coherence of the Natura 2000 interest (i.e. provision of compensatory habitat).

Proposals for a Severn Tidal Barrage are clearly of a major magnitude and may be expected to have a wide range of implications for wildlife inter-alia:

- Changes to tidal regime and to the tidal range of the estuary and hence changes to the unique hypertidal nature of the estuary feature, the extent of intertidal mudflats, changes to saltmarsh communities and changes in the behaviour of bird populations;
- Changes to sediment transport and sediment deposition that would affect evolution of mudflats, sandflats and saltmarshes;
- Changes to water circulation and therefore knock-on effects on water chemistry and water quality;
- Interruption of movement of migratory fish, including the Annex II species of salmonids, shads and lampreys.
- Wider effects on surrounding SSSIs.

These impacts will need to be studied in considerable detail before the full range of implications can be placed before the competent authorities. It is perhaps wise to note, however, that the UK Government’s Energy White Paper states in relation to tidal barrages that “such schemes have a very substantial impact on the local and regional environment and are very expensive.......it is clear that plans for a Severn Barrage would raise strong environmental concerns and we doubt if it would be fruitful to pursue it at this stage” (para 4.54). As a consequence, we believe it is important to give careful thought to the scale of work required to meet modern Environmental Impact Assessment legislation and the demands of the Habitats and Water Framework Directives. These processes will place a heavy burden on the regulatory regime with no certainty that an environmentally acceptable solution can be found.

The position of English Nature

English Nature is the body responsible for providing advice on wildlife conservation issues in England. As a consequence, we will play a central role in assisting Government to evaluate the wildlife implications of any proposed Severn Tidal Barrage. As part of this process, we will:
1. Work with the scheme’s proposers to ensure that information provided in their Environmental Impact Statement is transparent and realistic;

2. Maintain an independent view of the scheme and its likely implications for wildlife;


**Wider implications arising from a proposed barrage**

The Severn Estuary is one of the important gateways for Great Britain as a trading nation, and the ports that lie within the estuary make an important contribution to the nation’s wealth. They are also important as the closest point to the place of usage for the goods that they handle. As a consequence, there are likely environmental knock-on effects from any proposals that might limit the scope of these ports to operate:

- Increased pressure on capacity at other UK ports;
- Greater distances to be covered between the point of entry and the end-use, thereby increasing pressure on road and rail links in the already congested south-east;
- Possible increases in CO₂ emissions from additional road/rail and shipping miles;
- Loss of flexibility in development of short-sea shipping to provide fuel-efficient transport of goods;
- The need for new port, road and rail capacity to replace that which is lost at the ports of Cardiff, Newport, Avonmouth, Bristol and Sharpness. As most ports are located adjacent to prime wildlife sites, further losses of inter-tidal habitat must be anticipated and this too will need to be taken into account.

English Nature
Somerset and Gloucestershire Team

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