House of Commons
Energy and Climate Change Committee

A Severn Barrage?:
Government Response
to the Committee's
Second Report of
Session 2013–14

Fourth Special Report of Session 2013–14

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The Energy and Climate Change Committee

The Energy and Climate Change Committee is appointed by the House of Commons to examine the expenditure, administration, and policy of the Department of Energy and Climate Change and associated public bodies.

Current membership

Mr Tim Yeo MP (Conservative, South Suffolk) (Chair)
Dan Byles MP (Conservative, North Warwickshire)
Barry Gardiner MP (Labour, Brent North)
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The following members were also members of the committee during the parliament:

Gemma Doyle MP (Labour/Co-operative, West Dunbartonshire)
Tom Greatrex MP (Labour, Rutherglen and Hamilton West)
Laura Sandys MP (Conservative, South Thanet)

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The committee is one of the departmental select committees, the powers of which are set out in House of Commons Standing Orders, principally in SO No 152. These are available on the internet via www.parliament.uk.

Publication

The Reports and evidence of the Committee are published by The Stationery Office by Order of the House. All publications of the Committee (including press notices) are on the internet at www.parliament.uk/ecc.

The Reports of the Committee, the formal minutes relating to that report, oral evidence taken and written evidence from witnesses are available in a printed volume.

Committee staff

The current staff of the Committee are Sarah Hartwell-Naguib (Clerk), Liz Bolton (Second Clerk), Dr Alfred Gathorne-Hardy (Committee Specialist), Tom Leveridge (Committee Specialist), Luanne Middleton (Inquiry Manager), Shane Pathmanathan (Senior Committee Assistant), Jonathan Olivier Wright (Committee Assistant), Joe Strawson (Committee Support Assistant), and Nick Davies (Media Officer).

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Appendix: Government Response

The Government welcomes the Committee’s report on “A Severn barrage?” (HC 194), published on 10th June 2013.

The Government has clearly set out its position with respect to a Severn barrage. Following its extensive feasibility study of Severn Tidal Power (STP) the Government concluded in 2010 that it did not see the strategic case for public investment in a Severn barrage. It has not, however, ruled out a privately funded scheme coming forward.

The Severn estuary has great potential. However, the Government recognises that a traditional tidal barrage is not the only way of exploiting the outstanding resource of the Severn estuary.

The Government remains keen to hear about well-developed proposals for harnessing the power of the Severn estuary – be it through a barrage or other means.

However any such scheme would need to credibly demonstrate strong evidence of value for money, economic benefits, energy saving and environmental impact mitigation before the Government could take a view on its potential.

It is clear from the report that the Energy and Climate Change Committee shares the Government’s view on the level of development of the Hafren Power proposal. In its current form, the Hafren Power proposal for a Severn barrage does not demonstrate that it could deliver the benefits it claims it would achieve. The Government’s response sets out a number of the ways in which Hafren Power would need to improve its proposal for it to merit further serious consideration.

In its report, the Committee raised a number of detailed comments and recommendations. These are considered separately below.

Transparency and public consultation

1. Robust and credible evidence is fundamental to building trust and reassuring key stakeholders, particularly for an unprecedented and huge project such as the proposed Hafren Power barrage. We support the calls for further evidence and technical detail of the proposal in order to arrive at an informed decision. *We recommend that such evidence is placed in the public domain as soon as possible if stakeholder confidence is to be established and in order to promote maximum transparency.* (Paragraph 16)
The Government agrees with this statement. Given the significance of a project such as a Severn barrage and the broad interest it will generate across wide stakeholder memberships, it is vital that transparency and good communication should underpin the development of any such proposal.

The Government has been pleased to see that Hafren Power have shared their full Business Case with the Committee and have published a redacted version of it on their website. The Government encourages the consortium to continue ensuring transparency and good communication with their stakeholders and the public.

2. We further recommend that Government makes clear to Hafren Power that no further consideration will be given to their proposal until and unless the additional information requested has been provided. (Paragraph 17)

The Government has made it clear to the Hafren Power consortium that it would need to see much more detailed, credible evidence of their proposal before it would consider it further. The type of information the Government would expect to see in support of such a proposal includes:

- In-depth study of environmental impacts. This would require both baseline studies and estimation of likely effects.
- Detailed environmental compensation and mitigation plans.
- Further information on turbines including: modelling of impacts, plans to move from concept stage to commercialisation, including in-situ testing.
- Gaining commitment to the project from low head turbine manufacturers.
- Evidence to substantiate claims of how much of the proposed benefits can be delivered.
- Extensive stakeholder consultation including a clear, understandable breakdown of the level of public support the developer thinks they would need and a thorough, robust evidence base to support this.
- Analysis of impacts on upstream ports and navigation and mitigation plans.
- Detailed evidence supporting job creation figures.
- Detailed evidence of the flood impact figures.

The Government is prepared to further consider the Hafren Power proposal once this information is provided.

3. We consider Hafren Power’s expected timetable for the passage of a Hybrid Bill completely unrealistic. We note that the Hybrid Bill route does not offer an open and fully accountable process for stakeholders and affected parties. An application via the Planning Act 2008 may provide a more suitable legislative vehicle for a barrage project. Clearer guidelines on due process, expected timescale and the information required by Government under different legislative routes, and particularly under a Hybrid Bill, would be helpful for both stakeholders and developers. (Paragraph 22)
The detailed process and requirements for an application under the Planning Act 2008 are set out in secondary legislation, and explained in DCLG guidance notes and advice notes issued by the National Infrastructure Division of the Planning Inspectorate. Detailed information is available from the Planning Inspectorate website.1

The Government would expect an application for an installation of this type to be accompanied by an Environmental Statement (ES) to comply with the Environmental Impact Assessment (EIA) Directive. A Report on Consultation, demonstrating how the proposal has taken account of the outcome of consultation, and a Habitats Regulations Assessment of the effect of the proposal on protected sites would also be required.

The expected timescale for a proposal to be consented under the Planning Act regime would be approximately 2 years for the pre-application consultation process, 9 months for application and examination, 3 months for the PINS recommendation and 3 months for the Secretary of State to determine the application. This means that the earliest a formal application under the Planning Act 2008 would be is in Summer 2015 (and, since the EIA will require detailed studies of migrating and breeding birds and fish to establish a proper baseline, which are unlikely to be able to begin until Autumn 2013, then cover the breeding season of Spring/Summer 2014, this may be optimistic). If an application was submitted by Summer 2015, we would expect it to be determined by mid-Autumn 2016.

As the Minister noted in his oral and written evidence, the process for a Hybrid Bill is not specified by legislation. Before considering the introduction of a Bill, the Government would need to be persuaded, on evidence presented by Hafren Power, that the proposals would be viable. In order to reach such a conclusion, the Government would require much of the same information to that required to support an application for development consent, including evidence of the environmental impact of the proposal and of wide public engagement. It would further require satisfactory resolution of the level of Government support through Contracts for Difference (CfDs).

The Government would not expect to lay a Bill before the ES was received. Preparation of an ES is likely to take the same time as for an application under the Planning Act 2008, i.e. around 2 years, with the earliest possible completion date therefore being Summer 2015.

A slot in the legislative programme would need to be identified with Parliamentary Business Managers. It is likely that, even if time is found, this would not be before Autumn/Winter 2015, at the earliest. Depending on the complexity of the Bill (which is likely to need to cover, as a minimum, the same issues as a Development Consent Order under the Planning Act 2008, including all the relevant deemed planning permissions and other licences) it could take longer.

As noted in the report, there have been very few similar Bills to act as indicators of how long it might take for the Bill to complete the Parliamentary process. This would likely be at least a year, but it could extend to three or four years. This would indicate a time frame for Royal Assent, if such a Bill was introduced and enacted, between early 2017 and 2020.

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1 http://infrastructure.planningportal.gov.uk/application-process/the-process/
Costs and value for money

4. We recommend that Government ensure that levelised cost of energy analysis reflects a fair appraisal of long-term cost and power generation, which takes into account the full lifecycle of marine energy projects. (Paragraph 28)

The Department of Energy and Climate Change employs a flexible approach in calculating generation costs for Tidal Range projects, reflecting the uncertainty in this emerging technology. DECC’s Electricity Generation Cost publication draws on the Ernst & Young/Black & Veatch approach. This assumes a 40 year financial life in levelised cost of energy calculations, despite project lifetimes potentially exceeding this. Ernst & Young / Black & Veatch cite uncertainty in policy frameworks supporting generation over longer lifetimes, discounted cashflows making minimal impact past 40 years, and unknown timing and costs of project refits that may be required sometime after 40 years. This methodology is used to provide an illustrative estimate of levelised cost of energy for the tidal range (barrage) industry.

DECC’s latest estimates of levelised cost of energy for the Severn Barrage were calculated on a project lifetime basis, reflecting the availability of information on a project basis to enable this approach.

This flexibility in methodology when looking at both illustrative and project specific cost estimates for tidal range projects will continue to be reflected in DECC’s approach.

5. We believe that the strike price for the barrage would have to be considerably higher than the £100/MWh which Hafren Power have “in mind”. Furthermore, the company say they would require this price to be guaranteed for 30 years, twice as long as an offshore wind project. It is unsatisfactory that such wide-ranging figures have been cited regarding the level of Government support required for a barrage. As a minimum, the strike price for barrage-generated electricity should not be higher than that for offshore wind, which is expected to be around £100/MWh by 2020. While the use of novel turbines and updated design may indeed provide savings in barrage construction, it is very unlikely that the Hafren project will be financially viable with a strike price at this level. If a higher strike price was offered, it would risk swamping the Levy Control Framework to the detriment of other low-carbon technologies. Claims by Hafren Power of long-term affordability are too distant and uncertain a prospect to overcome more immediate economic, environmental and local concerns. (Paragraph 34)

It is not for Government to comment on what level of revenue support would make a privately funded project economically viable. Without further detailed evidence on the design of the project it is difficult to assess whether Hafren Power claims of the strike price they may require can be substantiated.

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As part of its June announcement, the Government stated that it was not intending to set a strike price for tidal range projects for the first Electricity Market Reform delivery plan period running to March 2019. This is due to the lack of cost data available for tidal range projects, including a potential Severn barrage. Instead, Government will consider how best to price CfDs and the appropriate length of contracts for tidal range projects, on a case-by-case basis.

In any case, the relative value for money of a Severn Barrage would need to be assessed alongside other low carbon generation competing for funding in the Levy Control Framework (LCF).

6. We do not believe that potential collateral benefits should be factored into any strike price negotiations. In the case of the Hafren scheme, significant uncertainty remains regarding whether such savings would in fact be made, and there is a lack of consensus regarding the impact of a barrage on flooding. The support available via Contracts for Difference comes directly from consumers via their energy bills. Any flood defence savings made as a result of projects supported will not accrue to bill payers but to the Exchequer. We recommend that the savings from any potential reductions in Government spending are disregarded when negotiating strike price. (Paragraph 37)

The strike price is set on the basis of the cost of building and operating specific technologies or generation assets in order to meet Government electricity objectives. It does not include secondary or collateral costs/benefits which might arise from a project such as potential flood savings. On that basis, we would not take into account flood savings or any other collateral costs/benefits in setting a strike price for the barrage.

7. While we do not share these concerns regarding foreign investment, and indeed welcome investment in renewable projects from private sources, all efforts should be made to ensure maximum UK content if the project is taken forward. (Paragraph 38)

The Government agrees with this statement. We welcome foreign investment in UK energy and infrastructure projects. However it is clearly desirable that these investments come with a high UK content and creation of UK growth and jobs.

Given the current level of detail of the proposal it is difficult to assess the validity of Hafren Power’s claim that 80% of the investment in their project would remain in the UK.

8. The Committee notes that the current mechanisms to support large renewable projects are limited in scope, and that support under CfDs will be limited by the Levy Control Framework. While private finance offers a welcome boost to infrastructure investment, particularly during the economic downturn, projects will inevitably need to provide an attractive return to investors and the future cost of such finance remains uncertain. We are not convinced that Hafren will be able to raise the funds needed for their project as easily and cheaply as they claim. (Paragraph 41)

To date, Hafren power have not presented the Government with compelling evidence of their likelihood of raising the necessary levels of finance for such a project.

9. Hafren Power’s proposals will require massive support under the Contract for Difference (CfD) mechanism and for a much longer period than alternative low-carbon
technologies. Currently it is unclear whether the company’s proposal would be eligible for such support since it has yet to prove value for money compared with other low-carbon sources. Until the company is able to provide stronger evidence of interest from investors and of the basis for its claimed costings, the economic viability of the project will be in doubt. (Paragraph 42)

The Government agrees that without further evidence it is not possible to assess the economic viability of the project nor the level at which it should be supported. We refer the Committee to our answer to paragraph 34 above.

Environmental impacts and mitigation

10. We conclude that the environmental impacts of the Hafren Power barrage, as currently presented to us, are very considerable and that there is a high risk of unintended and possibly damaging consequences. We also conclude that Hafren Power has not presented sufficient credible evidence relating to estuary morphology, impacts to habitats and upstream fluvial flood risk. Further data, research and modelling will be required before impacts in these areas can be assessed with any degree of certainty. (Paragraph 50)

11. We therefore conclude that the usefulness of international comparator sites is limited as a result of differences in estuary characteristics and scheme designs. (Paragraph 53)

12. We note that the Environment Agency claims that it is “not aware of any turbine designs which would allow the safe, repeated passage of fish through a barrage at the scale proposed.” While claims that a barrage would lead to very extensive fish mortality may be exaggerated, existing figures of low level fish mortality tend to derive from a single species and do not encompass the diversity of species found in estuaries. Studies have largely focused on only direct mortality. However initial studies on indirect mortality suggest it may constitute a significant source of overall mortality. Field testing a prototype in an estuary on a range of fish species and sizes will need to be carried out before the claimed “fish-friendliness” of Hafren Power’s proposed turbine can be determined. (Paragraph 57)

The Government agrees with the above comments. It is for the developers to do the necessary work to prove that their design is ‘fish-friendly’ and will not jeopardise the UK’s obligations under the Water Framework Directive and Habitats Directive. Such studies will need to take account of the wide variation in vulnerability of different fish species arising from to their different morphology, physiology and behaviour.

13. Before giving further consideration to the project, the Government should establish greater clarity in the terms and application of the Habitats Directive to major renewable infrastructure projects, in particular regarding the derogation process and principle of ‘Imperative Reasons of Overriding Public Interest’ (IROPI). (Paragraph 67)

Compliance with the Habitats Directive must be judged on a case-by-case basis as the impacts of a project can vary considerably between similar projects depending on factors
such as their scale, location and the exact technology used. It is therefore hard to provide
detailed clarity on how the Directive would apply to what is still a hypothetical, very high
level proposal. We would expect the European Commission to ask for much more detailed
proposals before discussing the detailed application of the Directive in respect of issues
such as ‘like for like’ compensation.

The Government is however committed to making its general guidance on the Directive
clearer and the IROPI principle is the subject of published DEFRA guidance\(^5\), including
advice on how and when the IROPI test should be applied. This sets out that ‘plans and
projects which enact or are consistent with national strategic plans or policies (e.g. covered
by or consistent with a National Policy Statement or identified within the National
Infrastructure Plan) are more likely to show a high level of public interest.’ Renewable
energy projects are therefore likely to show a high level of public interest given EU level
targets and the duties set out in the Climate Change Act. However this does not mean all
renewable projects can automatically go ahead. The developer also needs to be able to show
there are no alternative solutions and that they have secured compensation that will
maintain the integrity of the Natura 2000 network.

14. Serious questions remain about the effectiveness and feasibility of providing
compensatory habitat on the scale required for the proposed Hafren Power barrage
scheme. While optimisation of barrage design and operation offer possibilities for
mitigation, the requirements of the EU Habitats Directive are a significant challenge.
We note that smaller scale projects may face fewer obstacles in achieving compliance
with European legislation. (Paragraph 73)

The Government agrees – but given the sensitive and highly protected environment of the
Severn Estuary, any project may face insurmountable obstacles unless IROPI can be clearly
demonstrated.

15. We appreciate the financial outlay implied in, for example, developing a full
Environmental Impact Assessment of the proposed project. But it is clear that such a
large-scale, high risk and high cost project cannot go ahead in a designated area without
supporting evidence and assessments in place. Without such evidence the project will
not achieve political and public acceptability. (Paragraph 74)

The Government agrees.

Socio-economic impacts

16. The Hafren Power barrage scheme could offer significant benefits for the UK in
terms of jobs and growth, with the potential to reinvigorate the local economy. A tidal
barrage on this scale would highlight the UK’s engineering capabilities in the
construction of large-scale renewable projects. (Paragraph 79)

The Government’s STP feasibility study concluded that a barrage could benefit the regional
economy with net value added to the economy and jobs created. However, these would

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have to be balanced with potential negative impacts on the current ports, fishing and aggregate extraction industries in the estuary.

The net regional benefits represented in the STP study varied greatly (with construction jobs ranging from +5,300 to -2,200 (with a central estimate of +440 jobs) and GVA from £5.9bn to -£1.5bn (with a central estimate of £2.1bn)).

Benefits and impacts from the current proposal would differ depending on the specific features of the proposal including adequate provision for sea-locks as well as location and scale of manufacturing, supply chain etc. It is difficult to assess what the job and economic impact of the Hafren Power proposal will be in practice, not having seen detailed evidence behind their headline figures.

Whilst a project of this scale could highlight UK engineering capability, it is worth noting that the actual export potential for such a project are likely to be limited, given the maturity of the technology and the small number of sites around the world with the combination of features to make a tidal barrage viable.

17. Hafren Power has failed to reassure the ports industry that its business would continue to be viable with a barrage in place. Serious questions remain in regard to the barrage’s impact on water levels, shipping times, freight costs and siltation. These will need to be fully addressed before impacts to the ports can be accurately evaluated. (Paragraph 86)

The Government agrees with this observation. Each of the issues identified, even taken alone, could have very serious implications for the ports on either side of the Channel and estuary upstream from the proposed Barrage. The ports also identified the prospect of ship congestion at the lock system as a potentially serious deterrent to the choice of these ports by ship operators.

18. We therefore recommend that any claims about job creation and economic benefit should be independently verified, particularly with reference to the costs being borne by energy users, with adverse impacts to existing industries factored in to calculations in order to provide a robust assessment of net regional economic impact. The employment benefit of a barrage scheme is likely to centre around temporary jobs during construction. The number of high-quality, permanent jobs created by the proposals will be ultimately more significant. (Paragraph 90)

The Government agrees that detailed evidence needs to be provided to back up the Hafren Power proposal’s headline figures on jobs and economic benefits and that these should be independently verified. These figures are unlikely to be refined until greater clarity is provided on the actual design of the scheme including, for example, on:

- choice of turbine manufacturer;
- details on turbine operations;
- details on manufacturing and supply chain;
- adequate provision of locks and other measures to mitigate impacts on ports.
Decarbonisation and energy security benefits

19. We accept that a tidal barrage scheme in the Severn estuary could provide a reliable and predictable low-carbon electricity supply, which could bring benefits for energy security. Technological innovations such as smart grids, interconnection and electricity storage could help to overcome the challenges associated with tidal energy. (Paragraph 95)

20. We note the disparities in these carbon savings assessments and the need to take into account a carbon payback period. Carbon reduction offered by a barrage would nonetheless be considerable. (Paragraph 96)

21. We conclude that the Hafren Power project in its current form has not demonstrated sufficient value as a low-carbon energy source to override regional and environmental concerns. We agree with the Minister that, at present, the barrage is not vital to meeting our 2050 carbon targets, for which alternative pathways exist. On the basis of the evidence available, we further conclude that the same or similar policy objectives could be delivered through less environmentally damaging means and possibly at lower cost. (Paragraph 99)

Government recognises the strong energy and climate change benefits that a Severn Barrage could bring. It has summarised these in our written evidence to the Committee. However these cannot come at any cost. The Government agrees with the Committee that the Hafren Power proposal in its current form does not credibly demonstrate sufficient mitigation of the environmental and regional economic impacts. Nor does it demonstrate sufficiently good value for money for the consumers.

There are many ways in which the UK could meet its decarbonisation targets. The focus is on technologies which can allow us to meet these targets whilst balancing environmental impact mitigation, economic benefits and value for money for the consumer.

Barrage technology and alternatives

22. Although Hafren Power has assured the Committee that it has included time for turbine testing and development in the project timescale, we doubt that the two years proposed will allow sufficient time for production of a novel turbine as well as the necessary independent verification and trials. (Paragraph 103)

The Government agrees with this statement. It is our understanding from discussion with technology developers that such a novel turbine would take about 5-10 years to be developed, verified and tested.

23. We conclude that a more incremental approach using alternative technologies (such as tidal lagoons) may have the potential to provide a lower-risk, lower-impact option than the Hafren Power barrage scheme. Whether these alternatives offer better value for money is far from clear at this stage. Any alternative proposals to the Hafren Power scheme would need to demonstrate the same robust evidence about the costs, environmental and socio-economic impacts which we require for the Hafren Power scheme. We recommend consideration is given to first developing a smaller scale tidal project, in order to build a stronger evidence base for assessing impacts, risks and costs.
before proceeding with any larger scale scheme. The Government should take this into consideration before approving the development of projects in the Severn estuary. (Paragraph 114)

The Government agrees with this approach in principle. A smaller-scale tidal range scheme could in particular provide important information on the operation of the innovative turbines, which Hafren Power proposes to use. It is worth noting, however, that, given the considerable scale of a Cardiff-Weston type barrage and the unique environment of the Severn Estuary, a smaller-scale tidal range project would not necessarily provide wider evidence readily comparable to the type of impacts from a larger scheme.

Smaller schemes, including tidal lagoons, are still likely to be challenging and to have high capital costs. As set out by the Committee, smaller schemes would also need to demonstrate strong evidence of value for money, economic benefits, carbon saving and environmental impact mitigation.

24. We conclude that the Government should continue to examine the energy generating potential of the Severn region in the event of Hafren Power’s proposed barrage scheme not going ahead. We therefore recommend that the Government consider how a more proactive approach to Severn resource management could stimulate growth in the marine renewables industry and drive forward tidal projects in the region. (Paragraph 116)

There is a huge amount of potential energy in the Bristol Channel and it is only right that the Government should be seeking the best ways of extracting it. The Government’s STP study took an in-depth look at a number of tidal range options for the Severn estuary.

The Government welcomed the RegenSW report on a balanced technology approach in the Bristol Channel. The RegenSW report goes some way in looking at the possible combinations of renewable energy projects in the Bristol Channel to make best use of its resource whilst considering environmental impacts and regional industry concerns. Until concrete proposals are put forward by developers, the Government doesn’t see a strategic case for funding further studies to examine the potential of the region at the expense of the tax payers.

The Government sees the RegenSW report as a useful framework against which developers can best consider the appropriate use of resources in the Bristol Channel.

However, as many of these technologies are still emerging or not cost competitive, it is not appropriate for Government to take a directive approach. The Government sees this role as most effectively achieved by the market. It is not for Government to be directive over which technology solutions should be adopted by developers at the outset.

The Government has set out the broad agenda for the renewable energy mix it wants to see to the 2020s and beyond. We are putting in place a framework for efficient support mechanism through the Electricity Market Reform.

The Government is also fully committed to the development of a UK wave and tidal stream industry. To date, it has provided sustained and targeted support for the development of the sector enabling it to move from initial concept onto prototypes and now looking to
support the first arrays. The support package is comprehensive and larger than anywhere else in the world. In this spending period alone £80m of public money will have been invested in the sector. This has allowed the UK to maintain its standing as “the destination” for marine energy.

The Government strongly believes that these energy policies taken together will create an environment allowing winners to emerge naturally.

However, it is vital that any proposal or set of proposals demonstrate compellingly that they are viable, good value for money for the consumer and environmentally responsible.