

## Phil Jones

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**From:** Andrew Kelton [Andrew.Kelton@fishlegal.net]  
**Sent:** 28 April 2015 22:59  
**To:** swanseatidal@infrastructure.gsi.gov.uk  
**Subject:** Tidal Lagoon Swansea Bay - Fish Legal response to DECC consultation 14.4.15; ref. EN010049  
Fish Legal ref 10026558

Dear Sirs,

Please find attached a submission by Fish Legal in response to the DECC/Planning Inspectorate consultation letter of 14.4.15 relating to the Tidal Lagoon Swansea Bay, **ref. EN010049**.

A signed, etc hard copy will follow by post, but we wanted to ensure that the substance of the submission was with you by the deadline today.



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*Fish Legal is a membership association using the law to protect fish stocks and the rights of its members throughout the UK. It is united in a collaborative relationship with the Angling Trust, the national representative and governing body for angling in England. Joint membership packages with the Angling Trust are available for individuals, clubs, fisheries and other categories. [www.anglingtrust.net](http://www.anglingtrust.net)*

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28 April 2015

Tidal Lagoon Swansea Bay project team  
Secretary of State for Energy & Climate Change  
c/o The Planning Inspectorate  
Eagle Wing 3/18  
Temple Quay House  
Temple Quay  
Bristol BS1 6PN

By post and via email: swanseatidal@infrastructure.gsi.gov.uk

Fish Legal ref 10026558

Dear Sirs,

**Re: Request for comments on the application for the proposed tidal lagoon, Swansea Bay – EN010049**

Fish Legal represents a number of angling clubs in the Swansea Bay area, and has made submissions on their behalf throughout the Examination process.

We respond now in particular to Question 1 of the Secretary of State's 14 April 2015 request for comments, in relation to the Water Framework Directive (WFD) Art. 4(7)-(8) derogation provisions, from the perspective of possible impacts of the tidal lagoon project on migratory fish.

**Engagement of WFD Art. 4(7)-(8) in relation to migratory fish**

We have reviewed the applicant's Water Framework Directive Assessment – Updated Report v.2 (Oct. 2014) ("WFD Report").

The three waterbodies assessed for in-situ project impacts on fish are Swansea Bay, Tawe Estuary and Neath Estuary. However, fish had not been "considered within WFD as a quality element for coastal waters" (WFD Report p.31, p.102), so "as no baseline fish classification data is available..., it is assumed that [fish are] of a 'good' status [in these waterbodies]" (p.102, 3.6.3.19).

Some data relevant to WFD classification, for waterbodies that would be indirectly affected by project impacts on fish – the freshwater parts of the rivers Tawe and Neath, to which salmon, sea trout and eels migrate after passing through the bay – are provided in the form of Ecological Quality Ratios (EQR's) (eg. Table 3.15, p.102). There is no adequate explanation, however, of how these EQR data relate to the WFD status boundaries or how they otherwise assist in assessing deterioration from one status level to another.

The WFD Report states (3.6.3.21) that "the key potential effects assessed within the EIA (Chapter 9... of the ES) in relation to diadromous (migratory) fish [include]... habitat modification... and entrainment in the turbines". In fact the detailed conclusions of Chapter 9 of the ES were that there would be habitat fragmentation (delays, increased energetic costs, fragmentation of migratory routes), assessed as being of 'low' magnitude and 'minor'

significance to salmon and sea trout (Ch.9, pp.114, 121); loss/disturbance to sea trout foraging habitat, of 'medium' magnitude and 'moderate' significance without mitigation (the latter optimistically envisaged as 'reef creation' by building the lagoon sea wall<sup>1</sup>); and entrainment and injury from turbines of 'medium' magnitude and 'moderate' significance to sea trout (and insignificant for salmon) without mitigation (now proposed on a conditional basis as AFDs) (Ch.9, p.122).

Although the ES thus recognises, for example, that there will be quite significant impacts on sea trout foraging habitat, the WFD Report by contrast suggests that there will be little impact on foraging habitat and thus no resultant WFD deterioration (3.6.3.41):

“Given the large amount of alternative foraging habitat available over the rest of Swansea Bay and the Bristol Channel, the impact of habitat loss and modification associated with the construction or operational phase is not considered sufficient to result in the deterioration of the status of the River Tawe, its associated waterbodies or its transitional waters on a non-temporary basis”

Similarly, the WFD Report states in relation to entrainment impacts (3.6.3.61):

“Table 3.14 [3.17?] identifies that, following mitigation, the estimated annual mortality to Atlantic salmon and sea trout drops to between 0.04% (Atlantic salmon smolt) and 1.02% (adult sea trout). Based on the worst case assessment it is therefore considered that the impact on fish associated with the Tawe waterbody or its transitional waters from entrainment within the operational turbines, when AFDs are implemented, will not cause deterioration of the status of the River Tawe, its associated waterbodies or its transitional waters on a nontemporary basis. It is anticipated that the selection of variable speed turbines may obviate the need for AFD, although the AEMP secures an approach that allows their adoption if necessary in light of impacts actually experienced.”

The confusing conclusion as to entrainment impacts therefore seems to be: (1) following (AFD) mitigation, mortality impacts on sea trout will be 1.02%; (2) this level of impact will not cause a WFD deterioration (so Art. 4(7)-(8) is not engaged); (3) however, AFD mitigation may not in fact be 'needed' – so mortality impacts on sea trout, even with variable-speed turbines in place, could actually be c.2.5%.

There is no assessment of whether 2.5% mortality would, or might, cause a WFD deterioration; nor are any criteria provided against which such an assessment might be made (such as whether this level of impact might suppress fish populations below a WFD status boundary in any of the relevant waterbodies). In effect, no assessment of whether there may be a WFD deterioration, under the project as now planned, has therefore been provided.

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<sup>1</sup> “... for sea trout, habitat gain has been judged as a Positive impact of moderate significance, this is due to their coastal foraging behaviour and the positive effect which the artificial reef created by the sea wall would have on their population” (ES Ch.9, p.168).

What NRW says about predictable impacts on salmon and sea trout:

NRW's Deadline 2 (July 2014) comments in relation to the applicant's analyses of migratory salmonids impacts, mitigation and monitoring, included the following (emphasis added):

(i) Evidence on migratory salmonid behaviour (Annex H1):

"H1.14 The evidence base and options for verifying the modelling are limited as very few relevant tracking studies exists even for Atlantic salmon, which is one of the most studied migratory fish species. The lack of studies on the inshore migratory behaviour of salmon, sea trout and eels is identified as a knowledge gap ....

H1.42 .... The ES refers to three studies to verify the modelling for salmon; one from Alta fjord in Northern Norway for returning adult salmon and two studies of one individual smolt's outward migration from Southampton and Swansea Bay respectively. For sea trout, one reference to a study of adult sea trout kelts in SW England has been used as verification....

H1.61 .... There is ... a range of behaviours known to occur in the Bay for which turbine encounters has not been modelled such as fish shoaling, attraction to the water flow and to turbulent turbine flow (e.g. bass) sea trout foraging in the Bay, migratory fish being delayed in the estuary or impacts to resident river lamprey or eels etc.

H1.98 .... NRW believes that the level of uncertainties surrounding the information presented on baseline populations of fish within Swansea Bay are such that it is not possible to ascertain what significant mortality levels could be attributed to these fish species. Furthermore, the assessment criteria of <1% to >10% only takes into account impacts from the turbines; overall population changes and mortalities taking into account the turbines, increases in predation, adverse changes in supporting habitats for spawning and foraging etc. should also be included to account for all potential impacts arising from the presence of the Lagoon."

(ii) Confidence in the modelling (Annex H1):

“H1.15 Given uncertainties in the evidence base, NRW is unable to support the high level of confidence placed in the predicted scales and magnitude of impact (Tables 9.28 – 9.38)....

H1.69 .... This demonstrates the large degree of uncertainty around the modelling which NRW is concerned about but as mentioned above, it is not clear how this statement has shaped the confidence levels and results presented in the ES. This reinforces the need for solid monitoring to validate the predictions of the models and investigate likely impacts that may have arisen due to unknown factors not inbuilt into the model. If monitoring shows that impacts are higher than predicted in the ES then provisions should be made to mitigate for the additional impacts.”

(iii) Summary (NRW written representation Annex A, H1 – Fish):

“We consider that the ES and supporting Appendices presented do not provide adequate information and evidence to support the level of confidence ascribed. As a result we believe there remains a high degree of uncertainty regarding the impacts and consequently a high risk that the associated mitigation and monitoring proposed is inadequate”.

In its Deadline 6 (Nov. 2014) submission, NRW concluded:

“The applicant has predicted that there will be an adverse impact on fish receptors, based on modelling. Our view remains that the extent of the impacts cannot be quantified with a high degree of certainty and that there therefore remains a risk that the impact level is higher than predicted, or indeed that some impacts may not be accounted for...” (Annex 1 to NRW 25.11.14 submission, p.5).

#### Precautionary principle

The WFD Report itself (4.1.0.6) recognises that (emphasis added):

... where there is, will be or (on a precautionary basis) may be a failure to achieve... good ecological status or, where relevant, good ecological potential or to prevent deterioration in the status of the body of surface water...” further assessment is required under Article 4.7 of the WFD.

Given the expert regulator’s continuing view that there remains a large degree of uncertainty about the size (and thus the significance) of the project’s impacts on fish populations – migratory or otherwise – and given the lack of information provided by the applicant about whether migratory fish in the water bodies assessed may be close to WFD status boundaries

(so that WFD deterioration could result from minor to moderate project impacts), we suggest that the criteria for application of the precautionary principle (the applicability of which is recognised by the developer in the paragraph above), and thus for the engagement of Art 4(7), are fulfilled – ie. there is a significant risk of causing deterioration in status of one or more of the relevant water bodies as a result of project impacts on migratory salmonids, so that Art.4(7)-(8) is engaged.

### **Implications of engagement of Art. 4(7)-(8)**

Given that there is a significant risk that impacts on migratory fish will lead to a deterioration in WFD status of (any of) the relevant water bodies within the migratory range of those fish, then the provisions of Art 4(7) – applicable when there is a ‘failure to prevent deterioration of WFD status’, etc – apply to all those water bodies, and/or the no-less rigorous provisions of Art 4(8) (being applied in tandem with Art 4(7)) apply to those water bodies not directly impacted by the project. In other words the Art 4(7) derogation requirements, if the provision is to apply at all to the Swansea lagoon project, apply to all the water bodies identified in the WFD Report (not merely Swansea Bay as in the Secretary of State’s Question 1(i)).

The Secretary of State asks three questions<sup>2</sup> in relation to Art 4(7)(a), which requires that, for Member States not to be in breach of the WFD, “all practicable steps are taken to mitigate the adverse impact on the status of the body of water”:

- (i) Have all practicable mitigation measures to reduce any adverse impacts on the status of the Swansea Bay water body been considered? If not, please explain what additional measures might be taken.

Given the uncertainties as to the impacts to migratory salmonids, and as recognised by the applicant, an ‘adaptive’ monitoring and management system is essential, to give the best chance of providing all achievable mitigations as Art 4(7)(a) requires. The WFD Report, however, mischaracterises the adaptive approach:

3.6.1.14. In addition to describing the mitigation measures, Chapter 23 Mitigation and Monitoring and Appendix 23.1, the draft Adaptive Environmental Management Plan (AEMP), also provides details of the monitoring proposed.... The mitigation measures will be monitored and adaptations to the mitigation will be implemented if required, throughout the pre-construction, construction and post-construction phases of the Project. The statutory authorities will be required to be fully involved in agreeing the monitoring strategy, reviewing the findings and the development of any adaptations to the mitigation measures required. This adaptive monitoring process is recognised as appropriate within guidance documents including the ‘EC Guidance on the implementation of the EU nature legislation in estuaries and coastal zones...’

In fact the latter guidance states (as quoted in the WFD Report):

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<sup>2</sup> Question (iii) is not addressed in the present submission

“Where uncertainties or lack of knowledge on physical, morphological or biological processes still exist, these should be minimized as far as possible by additional research; where uncertainty remains adaptive monitoring programmes should be foreseen. New evidence and scientific information should be fed back into the management plan and where necessary lead to an appropriate adaptation of the management measures and monitoring schemes.”

The adaptive process is therefore not limited to monitoring the mitigation measures (as paragraph 3.6.1.14 states), but should be based on a wide programme of research and monitoring which is also likely to identify previously unidentified mitigation needs. Equally, it is more an adaptive management approach – indicating what possibly far-reaching changes in management/operation of the project need to take place – than an “adaptive monitoring process” (paragraph 3.6.1.14), which implies merely tinkering with the monitoring systems in place, not fundamentally addressing any operational changes needed.

(ii) How is it proposed to secure successful delivery of any mitigation measures?

The WFD Report’s assertion of ‘no deterioration’ in relation to migratory fish (based on predicted entrainment impacts alone) relies on AFD’s being in place as mitigation. The report provides no assessment of whether there may be deterioration without the installation of AFD’s – that question is simply not answered (see above). Assuming, on the required precautionary basis (where there are large uncertainties in evidence and modelling, as here), that there is in fact a real risk of WFD deterioration without AFD’s in place, it is essential that they should be firmly committed to and thus ‘secured’ as required by Art 4(7)(a), not made dependent on monitoring (as presently proposed) which itself may be inadequate to detect all impacts.

The Consultation Draft DCO provided a Requirement 40 as follows:

**Mitigation strategy for turbine impacts on fish including migratory fish and clupeids**

40.(1) No part of the development is to commence until a written strategy for the monitoring and mitigation of the impacts of the development on fish has been submitted to and approved in writing by the relevant planning authority. The strategy shall provide for:-

- (a) Monitoring of turbine impacts upon fish populations, including migratory fish and clupeids;
- (b) The use of Acoustic Fish Deterrents (AFDs) during the operation of the turbines, including triggers to be set identifying the level at which these will be implemented.
- (c) Monitoring the efficacy of the AFDs;
- (d) Measures that are to be taken for any times when the AFDs are non-operational;

(e) Agreement of acceptable thresholds of impact and further action to be taken if those thresholds are exceeded, for any given year during the operation of the project.

(f) An assessment of suitable compensatory measures to be provided if the thresholds are exceeded, in the event that mitigation proves ineffective or not feasible.

(2) The approved strategy must be implemented throughout the construction and operation of the development.

(3) The strategy must be reviewed annually unless otherwise agreed in writing by the relevant planning authority.

(4) No changes to the strategy are to be implemented unless they have been approved in writing by the relevant planning authority.

We note that this Requirement seems not to have been included in the draft DCO now submitted by the applicant to the Secretary of State for approval. We believe that more contentious issues, such as impact ‘trigger levels’ requiring mitigation/compensation, need to be agreed and secured in advance, to prevent difficult arguments later on, which it seems draft Requirement 40 would achieve (and as was secured in the Cardiff Barrage monitoring and mitigation agreement in the early 1990s).

As Fish Legal said in our Deadline 5 submission, we are concerned that the belated, and continually evolving mitigation/monitoring/offsetting plans (as in the various iterations of the AEMP) will therefore not have been adequately developed, consulted on and committed to by the time the DCO is formalised, and that the time pressure could well lead to plans that do not meet NRW’s requirements that they are robust, precautionary and fully committed to<sup>3</sup> in advance of the project’s going ahead. By way of example, in our opinion the provisions in draft DCO Requirement 6, relating to the AEMP, do not go far enough in actually securing mitigation and compensation for possible impacts to migratory salmonids.

Yours faithfully

Fish Legal

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<sup>3</sup> NRW refers to the need to ensure the “deliverability, effectiveness and enforceability” of the AEMP, which would encompass issues such as setting up an independent review group, and how that should be funded and secured in the consenting process.