



## **Wildfowl & Wetlands Trust Response to Consultations Regarding an Acoustic Fish Deterrent at Hinkley Point C Nuclear Power Station**

The Wildfowl & Wetlands Trust (WWT) is a wetland conservation charity based alongside the upper Severn Estuary at Slimbridge, Gloucestershire. We also manage a coastal saltmarsh on the Steart peninsula, close to Hinkley Point C nuclear power station (HPC). We conserve, restore and create wetlands to achieve a range of benefits for wildlife and people in the UK and locations around the world. We have 200,000 Trust members.

### **Purpose of this document**

This is a WWT response to public consultations relating to NNB Generation Company (HPC) Ltd (NNB) seeking to remove one of three mitigations for sea life losses due to water being taken from the Severn Estuary to cool the HPC nuclear power station when it becomes operational.

These three mitigations were set as a requirement separately by the Secretary of State for Energy & Climate Change, the Environment Agency and Marine Management Organisation in 2013 in order for NNB to be granted permits to proceed with construction of HPC.

NNB is now seeking to remove one of the mitigation/requirement: that an acoustic fish deterrent (AFD) be fitted to the intake tunnel heads, to scare generalist/specialist hearing fish away.

This submission is a dual response to two live consultations in relation to the above:

- NNB consultation ahead of its application for a material change to the HPC Development Consent Order (DCO)
- Environment Agency (EA) consultation on NNB's application for variation of the Water Discharge Activity (WDA) Permit, parallel to the DCO application above.

It also provides WWT's pre-emptive view to any future consultations on varying either the DCO, WDA or Marine Licence in relation to this matter.

We work closely with the Environment Agency and companies involved in constructing HPC. We have not been asked before to comment on the impact of its construction or operation on the environment. We appreciate this opportunity to contribute our views.

### **Severn Estuary legal environmental protections**

The Severn Estuary, in which the tunnel heads are being constructed, is a designated SPA, SAC and Ramsar site. It is materially connected to further protected sites.

The Severn Estuary's SAC citation lists the presence of Sea Lamprey (*Petromyzon marinus*), River Lamprey (*Lampetra fluviatilis*) and Twaite Shad (*Alosa fallax*) as qualifying features for its designation. Other species listed under Annex 2 of the Habitats Directive are also present at different times of year including Atlantic Salmon (*Salmo salar*) and Allis Shad (*Alosa alosa*).

Upriver, the River Usk and River Wye SACs also list these as qualifying species, whose populations rely on safe migratory passage past HPC through the Severn Estuary SAC.

## **Observations regarding Annex 2 species listed as Special Features for the Severn Estuary SAC**

We are concerned that the HPC risk estimates are largely based on the cycle of Hinkley Point B (HPB) impingement sampling which could underrepresent risk to sea life. Sampling takes place for only a single six hour period out of an average 730 hours operation each month, and only during daylight hours. This sampling frequency does not record night feeding fish or nocturnal migratory movements. It is also likely to miss unusual events – for example heavy storms forcing migrating fish listed under Annex 2 to the south of Bridgwater Bay where they may inadvertently perceive the tunnel heads as a point of shelter.

We are also concerned the level of risk is compounded by overly enthusiastic discounts: firstly a discount to compensate for the assumption that 80 per cent of fish would be impinged during the daytime ebb tide, whereas wider surveying found a majority of juvenile fish moving generally around the area, some of which are night feeders and; secondly a discount for the different design of the HPC tunnel head, which is untested so this discount may not be safe.

### **Sea Lamprey**

Sea Lamprey losses are likely to be undercounted in NNB's figures. Post metamorphosis Sea Lamprey are frequently active at night (Andrade et al 2007) so are likely to be underrepresented in HPB's daytime sampling<sup>1</sup>.

### **Twaite Shad**

The percentage of Twaite Shad likely to be killed appears to be incorrectly low. NNB has calculated this as 273 individuals lost per annum, being 0.15% of a population of 184,000. However recent figures from the Environment Agency & Severn Rivers Trust calculate the migrating population in the Severn Estuary at around 10-15,000 individuals per year, representing a loss of between 2.7 – 1.8% – high above the arbitrary 1% "negligible" threshold suggested.

Indeed, we contend the population totals for species are generally taken from too wide an area, thus the percentage losses appear lower than they should be. We understand the area suggested for each species takes into account connected stocks. But, for example, it seems incredible to calculate figures for Bass losses in the Severn Estuary as a percentage of their total population in waters between the coasts of Denmark and Iceland. Consideration of the removal of anadromous fish stock from highly traditional breeding areas requires further calculation.

## **Other evidential observations**

### **WWT Steart Marshes**

The estimated fish losses are likely to be increasingly underrepresentative in coming years, due to the recent creation of a saltmarsh on the shore close to HPC at which extensive fish nurseries will develop.

These cannot be considered as 'additional' fish in the Severn, because this is as a result of suitable habitat created to compensate for saltmarsh nurseries and feeding areas for fish being lost elsewhere in the estuary due to rising sea levels and resultant coastal squeeze.

The effect will be that, in future, a greater proportion of the Severn Estuary's production of fish eggs and young is likely to be closer to the tunnel heads, which is likely to increase risk of entrapment.

Although the new water intakes are further offshore than the current ones, many of the fish which use Steart Marshes may retreat at low tide into the deeper water channels of the estuary, which are where the new intakes are situated,

### **European Eel (*Anguilla anguilla*)**

European Eel is present within the Severn Estuary and is listed as Critically Endangered by the International Union for Conservation of Nature (IUCN). Reference to the impact on eels and the measures that are required to compensate for these losses is an imperative principle and needs addressing.

## **Technical questions regarding tunnel heads**

Overall fish losses could be underestimated because:

- Page 16 of NNB's consultation overview<sup>ii</sup> states a minimum recommended screen rotation speed of 1.5 metres per minute, but that the HPC band screen will only rotate at 0.5 metres per minute. We are not engineering experts but we wonder if this could increase losses due to fish being impinged on the screens for longer?
- The 2012 EA Appropriate Assessment<sup>iii</sup> shows the mesh at Oldbury power station, on which a small minority of the estimates for fish losses are based, was 10mm rather than the 5mm mesh proposed for HPC. Therefore the proposed 5mm mesh would cause increased losses due to the additional fish that would be impinged. We cannot find compensatory calculations for HPC, thus losses are likely to be underestimated. (It is unclear whether HPB has a 5mm or 10mm mesh – if it's the latter then clearly the figures collected there would also need recalculating)
- The documentation leaves it unclear as to whether or how often NNB may employ chlorine to flush through the cooling system:

#### **iv. Chlorination**

19.10.28 The primary means of constraining the operational need to control biological fouling through oxidant dosing is via continuing surveillance both of local intertidal shores and for the presence of epifaunal growth within the cooling water circuits themselves.

19.10.29 Such surveillance is currently maintained by HPB and elements of this, adapted as appropriate given the difference in plant design (primarily the offshore position and low flow nature of the HPC intake design), will be adopted by the HPC operator.

Given that NNB accepts in its documentation that the use of chlorine could kill 0.05% of Inner Channel phytoplankton per day, we are concerned there may be insufficient management of this risk.

## **Procedural observations**

The HRA element of the Secretary of State's decision to grant a WDO relied upon a Report on the Implications for European Sites (RIES). This was compiled by the Planning Inspectorate in consultation with Environment Agency, Natural England, Countryside Council for Wales, Marine Management Organisation and RSPB.

The RIES does not appear to be available online, but the Planning Inspectorate's description of it is available as part of their recommendation paper to the Secretary of State. While RSPB only commented on ornithological matters, it is clear that all the other consultees were not convinced that the AFD/fish return/low velocity package of mitigation would work and agreed to these measures only if their efficacy was demonstrated in practice. As a result, the DCO set requirements for AFD monitoring and adaption plans and testing to precede any in-situ operations.

If these plans and testing are removed, then the DCO will not have addressed the RIES consultees' greater concerns. As such, we contend that removing this one element should open all the mitigation package elements to be revisited in light of the revised evidence provided by NNB.

Separately, we note that most assumptions on interpretation of base evidence and the level of risk (i.e. how extensive a fish species population to cite as a 100% figure, and whether 1% losses might be considered as "negligible") were made by a single contractor, Cefas. We believe Cefas's relationship as a contractor to NNB and an agent of government raises unavoidable questions of conflict of interest.

## **WWT's conclusions**

The Secretary of State's decision letter<sup>iv</sup> shows he awarded a permit on the basis that AFD returned deflection efficiencies of 80-90% for hearing specialists and 50-70% for hearing generalists, as opposed to "almost no benefit" as EDF now claims. EA awarded a permit on the premise that monitoring and adaption plans and testing would happen.

If NNB's revised evidence causes such a major shift in their opinion of the AFD's efficacy, then we believe the whole package of mitigation measures should be revisited.

NNB has kindly provided their updated assessment of the risk to sea life if the AFD were not included, as part of their consultation document suite. But, as outlined above, we have concerns regarding evidence collection underrepresenting risk, population estimates being drawn too widely, gaps in evidence, and assumptions therefore being unsafe.

The Severn Estuary SAC's Conservation Objectives require that populations of qualifying species and their distribution be maintained or restored within the estuary site. (They do not relate to whether these losses may be judged as negligible or not in terms of wider intercontinental and commercial fish stocks.)

We believe NNB's mitigation package carries an unacceptable level of risk to the qualifying species' populations being maintained, regardless of whether AFD is fitted or not. We also believe it carries an unacceptable risk to these populations being restored because of the risk of losses counteracting conservation measures to increase fish stocks at WWT Steart Marshes and the multi-agency *Unlocking the Severn* project (with a combined cost of over £40m).

It is therefore our opinion that the cooling system currently being constructed at HPC would be likely to contravene the Conservation of Habitats and Species Regulations 2017 (as amended from time to time) as soon as it were to become operational, due to the risk it presents of adverse effect on the integrity of the SAC. However it is our belief that if construction is allowed to continue, our initial impression is that compensatory habitat measures on their own are likely to be inapplicable due to the nature and scale of the issue. Solutions that include both habitat creation and enhancement within the intertidal and freshwater catchment of the River Severn together with on-site cooling towers or closed/partially closed cooling systems must be considered.

To answer the specific question set by both EA and NNB – whether a variation should be granted to the DCO or WDA permit – our response is that we believe both permits are now unlawful, and the variation request has become a moot point. We, of course, maintain the right to bring a challenge in law as may become appropriate.

Finally, aside from NNB's helpful documentation, we do not find some of their public statements to be helpful.

- The suggestion of risk to divers appears tangential – the area has always been too dangerous for recreational diving anyway, and the risks to construction/maintenance divers will not have changed since the original permit applications. The issue appears to be instead that NNB hoped it could construct a raisable cradle for the AFD but has since found this too impractical and costly, and is constructing arguments to avoid this cost.

- Equally, the suggestion that fish losses equate to one small trawler is counterproductive. No trawler would be allowed to operate in the Severn Estuary SAC because of the disproportionate damage it would cause to sea life. It is concerning that NNB is suggesting they would cause similar damage.

We are content for this document to be made public in full.

James Robinson  
Director of Conservation  
Wildfowl & Wetlands Trust  
22 May 2019

- 
- <sup>i</sup> Para 6.4.4 [https://consult.environment-agency.gov.uk/psc/ta5-1ud-nnb-generation-company-hpc-limited-2/supporting\\_documents/Application%20Variation%20Supporting%20Information%20%20Report%20to%20Inform%20the%20Habitats%20Regulations%20Assessment.pdf](https://consult.environment-agency.gov.uk/psc/ta5-1ud-nnb-generation-company-hpc-limited-2/supporting_documents/Application%20Variation%20Supporting%20Information%20%20Report%20to%20Inform%20the%20Habitats%20Regulations%20Assessment.pdf)
- <sup>ii</sup> [https://www.edfenergy.com/sites/default/files/consultation\\_overview\\_document.pdf](https://www.edfenergy.com/sites/default/files/consultation_overview_document.pdf)
- <sup>iii</sup> [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/301540/gesw0712bwtl-e-e.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/301540/gesw0712bwtl-e-e.pdf)
- <sup>iv</sup> <https://infrastructure.planninginspectorate.gov.uk/projects/south-west/hinkley-point-c-new-nuclear-power-station/>