

Environment Appeals Administration
The Planning Inspectorate
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21 October 2020

Dear Mr. Gordon

RE: NNB Generation Company (HPC) Limited Water Discharge Activity Permit application number EPR/HP3228XT/V004

I refer to the appeal by NNB Genco on its application to vary its Water Discharge Activity (WDA) Permit to remove the placement of an Acoustic Fish Deterrent (AFD) at its cooling water intake pipes at Hinkley Point C nuclear power station (HPC) in Somerset. The purpose of the AFD is to reduce the number of fish drawn into (and killed in) the cooling water system.

The Wildfowl & Wetlands Trust (WWT) is the UK's leading wetland conservation charity based alongside the upper Severn Estuary at Slimbridge, Gloucestershire. 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 are supported by over 200,000 members.

The Severn Estuary is one of the largest and most important mosaics of wetland habitat in Europe. The estuary and its tributary rivers support a wealth of wildlife and receives protection under domestic and European legislation. Its coastal habitats provide a home for tens of thousands of migratory waterbirds, around 100 species of fish, three of which are interest features of the Special Area of Conservation (SAC: Sea Lamprey *Petromyzon marinus*, River lamprey *Lampetra fluviatilis* and Twaite Shad *Alosa fallax*), and large numbers of invertebrates. The estuary is also a vital migration route for migratory fish, including Atlantic Salmon *Salmo salar*, Sea Trout *Salmo trutta* and European Eel *Anguilla anguilla*, the latter qualifying as globally critically endangered by the IUCN. WWT has been concerned that the cooling water system being installed at HPC could have a significant impact on the wildlife of the estuary, particularly those fish species which will be directly impacted.

WWT also manages a coastal saltmarsh on the Steart peninsula, and the proximity of HPC water cooling intake and return pipes to Steart Marshes is a particular cause for concern for us. Steart Marshes was created as compensatory habitat for saltmarsh loss elsewhere in the estuary due to coastal squeeze, and initial evidence strongly suggests it provides habitat for a large number of juvenile fish as there is limited saltmarsh habitat elsewhere in the estuary.

Our concerns are described in our response to the EA's consultation on the Permit variation <https://www.wwt.org.uk/uploads/documents/2019-08-23/1566553767-wwtresponse-hpc-afd-ea-consultation.pdf>. The following is based on the content of that response.

Paragraph 334 of the original Decision document indicates that, as the relevant pollution control authority, the Environment Agency (EA) granted a WDA Permit which places a "high dependency on the proposed mitigation measures" including the AFD for generalist and specialist hearing fish species. This is a repeat of the wording used in EA's Habitats Regulations Assessment (HRA): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/291293/LIT_7942_4c3864.pdf

In turn, EA's HRA (p132) uses evidence from Doel nuclear power station in Belgium to demonstrate general expected effectiveness of AFDs, quoting deflection efficiencies of between 50% for Gobies and 95% for Herring *Clupea harengus*, even without a low velocity intake. We note the Development Consent Order (DCO)'s HRA also quotes these figures:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/301540/gesw0712bwtl-e-e.pdf

The original decision includes a pre-condition to test and optimise the mitigation system, stating that due to the “many different factors influencing impingement and entrainment within the Severn Estuary and the reliance on the proposed preventative measures, we recognise that there is still scope for potential improvements to the AFD and FRR systems to increase their effectiveness and in turn, protect more fish.” However, this Application from NNB Genco expressly sought to amend the system to protect fewer fish, in direct contravention of the EA’s intention, on which both its own Permit decision and the associated DCO and Marine Licence decisions rely as being the minimum requirement. If the EA had accepted the application, it would have effectively been accepting a shift from a ballpark estimated 46-95% deflection efficiency for generalist/specialist hearing fish, to zero, having previously stated in a legal document its intention to ensure more fish would be protected rather than fewer.

For this reason, we contended the application to amend should have been refused. We note that the EA has recently announced to stakeholders that “While we had not made a final decision on the application to remove the AFD, our provisional conclusion was that its removal, without additional mitigation measures, is unlikely to meet the requirements of the Habitats Regulations”.

The nature of this Permit is that the whole system is seen as part of the WDA and thus is considered as a whole. To this end we note that NNB Genco sought to change the baselines and assumptions on which biodiversity in the Severn Estuary, and the relative damage caused by the remaining mitigations, are measured, the apparent intention being to minimise the estimated increases in marine life losses and to suggest these inevitable increases would still be acceptable under the criteria by which the original Permit decision was made.

In the first instance we note the procedural anomaly of this approach, i.e. an approach to effectively justify a decision made on the basis of cost and health and safety, by altering the data in such a way as to make it appear an inconsequential change. This is not a logical or environmentally responsible approach.

Secondly, having appraised the suggested baseline changes included in NNB Genco’s supporting evidence document TR456 (https://consult.environment-agency.gov.uk/psc/ta5-1ud-nnb-generation-company-hpc-limited-2/supporting_documents/Application%20Variation%20Additional%20Document%20Item%201%20%20TR456%20Revised%20Predictions%20of%20Impingement%20Effects%20updated.pdf), we raise the following concerns:

- Routine Impingement Monitoring Programme (RIMP) sampling only takes place for a single period of 6 out of an average 730 hours per month. This could underrepresent losses, especially if these periods do not coincide with peak fish migration traffic.
- The applied reduction to impingement figures at a factor of 1.6, based on cross-reference of sampling periods against ebb tides, seems questionably high if wider surveying finds the area is characterised by juvenile fish moving generally around the area.
- RIMP sampling only takes place during daylight hours. Thus night time migration episodes and habitual night feeders may be underrepresented, including Sea Lamprey which is cited as an interest feature for the Severn Estuary Special Area of Conservation (SAC).
- Estimated percentage losses for Twaite Shad, another interest feature of the SAC, appear to be incorrectly low, based on Cefas’s figures assuming a population of 184,000. However, given the large declines of this species the current population in the Severn Estuary is now thought to be down to the tens of thousands (<https://www.theriverstrust.org/2018/07/17/multi-million-pound-project-to-reopen-uks-longest-river-to-protected-fish-species/>).

- The baseline areas on which species population figures are calculated appear to be unnecessarily large, which may underrepresent the percentage of fish loss in the Severn Estuary. To illustrate this, it seems incredible to calculate losses for Sea Bass *Dicentrarchus labrax* in the Severn Estuary as a percentage of their total population as far away as waters around the coast of Denmark.
- Future losses may be underrepresented due to the current formation of saltmarsh at Steart Marshes. This is compensatory habitat for saltmarsh loss elsewhere in the estuary due to coastal squeeze, and will have the effect of producing a greater proportion of the estuary's young fish much closer to HPC. At low tide, many fish which use Steart Marshes may retreat into the deeper water around the tunnel intakes.
- The calculation of the number of fish impinged appears to be based on data from the Hinkley Point B CIMP study, which used a 10 mm mesh, compared to the proposed 5 mm mesh at HPC which would inevitably impinge additional fish under 5 mm. If the figures have not been corrected to take account of this, then all the impingement figures quoted will clearly be incorrectly low.
- We contend Cefas's suggestion that "1%" could be an acceptable loss rate across the board for all species, especially where the baseline figure from which that 1% is derived is questionable. For Twaite Shad, for example, there is no supporting evidence as to how additional losses may interplay with the species' dramatic decline in recent decades.
- Flow rates are based on 130 cumecs, but Para 2.2.6 of the NNB Genco's Justification and Evidence Report states: "Currently work is underway to confirm the flow rates...these values will be confirmed [by within 3 months of hot testing]" which suggests flow rates could be higher than stated, thus fish losses could be underestimated: https://consult.environment-agency.gov.uk/psc/ta5-1ud-nnb-generation-company-hpc-limited-2/supporting_documents/Application%20Variation%20Supporting%20Information%20%20Justification%20and%20Evidence%20Report.pdf

Notwithstanding the above bullet points, the application made it very difficult to draw a direct comparison of estimated fish losses with or without the AFD. Tables 18 and 23 in TR456 appear to be the nearest direct comparison but even here it is practically impossible to marry up the assumptions behind each, as a result of the changes to the assessment process detailed in Table 20 of TR456. Removing the AFD clearly causes higher estimated losses, but it is unclear whether these losses have been artificially minimised due to different base data and assumptions being applied. As such, we can place little confidence in the figures presented.

We note further areas of concern around the design and operation of the plant. We are not engineering experts so cannot comment in detail.

We question the lack of consideration of the impact of the number of returned dead and injured fish from the fish return pipe, and the consequence of this for the distribution of species within the Severn Estuary, especially of predatory species such as marine mammals or birds. We pointed the EA towards a lack of clarity regarding the regime to defoul the system, and also regarding the speed of rotation of the mesh drum. This rotation varies from 0.5 to 20 metres per minute in different documents. By cross-referring documents, it appears the "normal" speed would be 0.5 m/min, taking 100 minutes to revolve, whereas EDF's separate pre-DCO consultation (not included in the application) states a minimum recommended screen rotation speed of 1.5 m/min. This suggests a risk of additional and unnecessary impingement losses as fish are left on the mesh too long (or possibly spun too fast).

The relationship between Cefas and the NNB Genco remains unclear. Clearly if NNB Genco has paid Cefas for its research, there is a potential conflict of interest.

There is also a potential conflict between increasing fish losses in the Severn Estuary, and work to reverse fish population declines in the same area including the aforementioned Steart Marshes, and also the Unlocking the Severn project, with a combined cost of over £40m – much of which EA had lead responsibility for funding decisions. We therefore contended that the entire application should be refused because these revised figures appear to us to be unsafe to provide sufficient confidence that marine losses could be legally defensible whether an AFD is fitted or not.

Even if a robust method of monitoring were to be included, this will take a number of years to reflect fish life cycles in the Severn Estuary. A worst case scenario would be the monitoring showing fewer and fewer Twaite Shad for example, not because they are not being entrapped, but because the system is contributing to their local extinction. Even if monitoring did reveal unacceptable losses, it is impractical to think HPC would be taken out of service for months or years while a new cooling system was designed and built. Other methods already exist to cool nuclear power stations.

We have referred the EA to its obligations under the Conservation of Habitats and Species Regulations 2017. The proposed Direct Cooling Water System causes significantly more damage to animal life in the Severn Estuary, with its various legal protections, than other methods. And the System causes even more damage if an AFD is not implemented.

On the basis of the evidence, we contend the original Permit should be rescinded in its entirety so that alternative methods can be posited as quickly and cost-efficiently as possible.

Yours sincerely



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