Hinkley Point C

Appropriate Assessment for related environmental permits

Executive summary

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Executive summary

NNB Generation Company Limited (NNB GenCo) has applied for three key environmental permits that it would need to build and operate a proposed new nuclear power station at Hinkley Point in Somerset. These permits would allow NNB GenCo to discharge and dispose of radioactive waste, discharge water and operate large diesel generators.

We carried out an 'Appropriate Assessment' under The Conservation of Natural Habitats and Species Regulations 2010 for each of these permits to test whether they could have a significant negative impact on both the Severn Estuary and the Exmoor Quantock Oakwoods European habitat sites.

The main part of the assessment was concerned with the discharge of water and its potential effect on the Severn Estuary Special Area of Conservation (SAC), Special Protection Area (SPA) and Ramsar sites, as the proposed Hinkley Point C site is directly next to and partly within these designated sites.

As part of our assessment, we researched technical reports from the Centre for Environment, Fisheries and Aquaculture Science (Cefas) on behalf of Électricité de France (EDF) and Nuclear New Build Generation Company (NNB GenCo), scientific papers and consulted with a number of experts about the effects and impacts on the designated sites.

The data and approach we used to reach our conclusions have been reviewed both within and outside our organisation and endorsed by national experts with particular knowledge of the Severn Estuary.

The main areas of potential concern we focused on included toxic contamination (changes to water quality), thermal impacts (effects of heated water discharged from cooling the power station), entrainment (being drawn into the station's water cooling system) and impingement (trapped against screens when water is drawn into cooling system) of fish and other organisms, and disturbance to birds.

We assessed all of these for Hinkley Point C on its own, and for the combined impact of Hinkley Point C together with other ongoing activities and planned projects in the area.

The conclusions below reflect our findings for the Severn Estuary Natura 2000 sites and also cover any potential impacts on associated sites: River Usk/Afon Wysg SAC River Wye/Afon Gwy SAC; River Tywi/Afon Tywi SAC.

We concluded that there was no adverse effect on the integrity (the site as a whole) of the Exmoor Quantock Oakwoods SAC.

Changes to water quality

We found that proposed levels of toxic substances in the cooling water were above the relevant standard. Particularly, levels of a substance called hydrazine were potentially significant and could have a negative effect on the integrity of the Severn Estuary SAC. Therefore, the environmental permit will state that hydrazine has to be removed from the relevant waste before it is discharged.

We concluded that the levels of all other toxic substances in the discharges from Hinkley Point C were very low and would not have an adverse effect on the integrity of the site.

Effects of heated water discharged from the power station

The heated water discharged from Hinkley Point C will lead to a rise in the temperature of the water in the Severn Estuary SAC. This could potentially affect the species that live on the estuary floor, in particular, the Baltic clam.

However, evidence on the Baltic clam, and other organisms within the mudflat area of Stert Flats that are currently affected by the cooling water discharged from Hinkley Point B, show that they are no different from those elsewhere in the estuary. This suggests that Hinkley Point C would also have no significant effect on such organisms.

We have, therefore, concluded that temperature changes due to the water discharged from Hinkley Point C would not have an adverse effect on the integrity of the site.

Effect on fish and other organisms

The measures proposed for Hinkley Point C to prevent fish and other organisms being drawn into the station's cooling system (entrainment) and becoming trapped against screens when water is drawn into the facility (impingement) include a low velocity intake design[1], acoustic fish deterrent system[2] and a fish recovery and return system[3]. We took these measures into account when calculating the number of fish that could be killed (impingement losses) as a result of operations at Hinkley Point C. These were predicted to be similar to or less than those at the existing Hinkley Point B station.

Based on the information EDF provided in its report to support the Appropriate Assessment, supporting technical documents and our assessments, we concluded that the predicted number of fish killed through impingement and entrainment at Hinkley Point C should not significantly damage either the protected species, other species in the estuary or the integrity of the site.

However, given the many different factors influencing impingement and entrainment within the Severn Estuary/Bristol Channel and the reliance on the proposed measures

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1 Low velocity intake design = A design that will mean water is abstracted at a low velocity so medium to large fish can escape the cooling water intake flow.

2 Acoustic fish deterrent system = A design that will be fitted to the outside of the intake structures and emit a high frequency sound so certain fish will be alerted and avoid the cooling water intake

3 Fish recovery and return system = A design that will recover and return certain fish species trapped between the cooling water intake and power station.

to prevent this happening, there is still scope to potentially improve the systems further to protect more fish and reduce the amount killed.

We, therefore, consider it extremely important that the final designs of both the fish recovery and return system and acoustic fish deterrent system are tested well in advance of Hinkley Point C starting to operate, and preferably at the commissioning stage, to ensure the systems operate to the best performance to protect the fish and estuarine organisms of the Severn Estuary.

We have advised the competent authorities (Secretary of State (SoS)) and Marine Management Organisation (MMO)) that a comprehensive ecological monitoring and contingency plan should be developed before any water is abstracted.

Disturbance to birds

Birds in the area are most likely to be affected by the construction of Combwich Wharf. The Parrett Estuary next to Combwich Wharf, which is part of the Severn Estuary SAC/SPA/Ramsar, is an important site for birds.

Data shows that there are large numbers of birds within 250m of the area where the wharf will be built, including three SPA qualifying species (gadwall, redshank and curlew) and three SPA listed species (wigeon, mallard and lapwing). There are also significant numbers of SPA birds in Combwich Brickpits County Wildlife Site next to Combwich Wharf, which were not included within the surveys carried out. This means we do not know the total number of birds in the whole river area. Given this, we were unable to conclude that the integrity of the site would not be affected without taking measures to protect the birds.

With advice from Natural England, we have strongly advised the competent authorities (SoS and MMO) to make sure that further measures are built into the project to protect migratory and other birds by introducing a ‘Shelduck and non-breeding birds mitigation and monitoring scheme’.

Combwich Wharf – loss of habitat

Refurbishing and operating Combwich Wharf will mean more vessels will be using the River Parrett. This could potentially cause erosion on the north side of Combwich and further erosion on the adjacent bank of the River Parrett.

The banks of the Parrett are made of mud, sand and saltmarsh, which are important features of the SAC. As they are already in a poor condition, we have advised the relevant competent authority that a strategy to monitor the speed of vessels using the river needs to be in place to protect the habitat of the Severn Estuary SAC and Ramsar during work at Combwich.

In-combination effects

The main concerns from both the effects of all the activities within the Hinkley Point C project and also those combined with all other current activities and planned future projects in the area (known as the 'in-combination assessment') were around the construction of Hinkley Point C and the effects of the overlap period between Hinkley Point C and Hinkley Point B.

We focused on the same areas of concern as in the assessment of Hinkley Point C on its own, namely toxic contamination, thermal impacts, entrainment and impingement of fish and other organisms. The main impacts to birds were considered to be from water temperature increases on their food source within the mudflats.

A major factor in assessing the in-combination effects for the heated water discharged from the power station was the close proximity of the water discharged from Hinkley Point B to the proposed cooling water discharged from Hinkley Point C.

However, using studies from the Gironde Estuary in France and data from Hinkley Point A, we have concluded that the combined cooling water from Hinkley Point B and C discharged up until 2023 will not have an adverse effect on the integrity of the site.

We also considered the effects of cooling water on fish, and concluded that there was no significant impact on the migratory or other fish in the Severn Estuary SAC and Ramsar.

Looking at the in-combination effects of the chemical discharges, as with the assessment of Hinkley Point C on its own, it was not possible from the information available to conclude that the discharge of hydrazine does not have an adverse effect on the integrity of the site.

We assessed the cumulative effects of impingement and entrainment together with the in-combination effects of both Hinkley Point B and Hinkley Point C. The species that required detailed investigation included the brown shrimp, whiting, sprat and cod.

Extensive studies have shown the impacts of Hinkley Point C and B will not have a significant effect on the species during the timeframe considered. Although, if Hinkley Point B has to continue operating beyond 2023, another Habitats Regulations assessment will be needed.

We assessed the in-combination effects of vessel movements and concluded that without suitable measures moulted shelduck and other non-breeding birds could be significantly disturbed by more vessels using the River Parrett and the temporary jetty. With advice from Natural England, we have strongly advised the competent authorities (SoS and MMO) to make sure that further measures are built into the project to protect migratory and other birds by introducing a ‘Shelduck and non-breeding birds mitigation and monitoring scheme’.

Conclusion

This assessment has considered all relevant factors and been reviewed by a number of people within the Environment Agency. Consultation has also taken place with Natural England and Countryside Council for Wales. As the competent authority for permits associated with this proposed site, we have concluded that:

- The substance hydrazine could potentially have a significant impact on the features of the site. Removing hydrazine from the relevant waste before it is discharged will eliminate this risk.

- Temperature increases from the discharge of cooling water affect species in the mudflat areas of Stert Flats, particularly the Baltic clam. However, research into similar sites and the experience from Hinkley Point B indicates that there would be no significant effect on these species.

- With measures such as a fish recovery and return system, and an acoustic deterrent system in place for the Hinkley Point C site, we believe that there will be no adverse effect on fish. However, the final designs should be tested at the commissioning stage of the set up, well in advance of the full operation of Hinkley Point C.

- We were unable to conclude there would be no adverse effect on the birds listed in the European site designation due to disturbance (noise and visual) at the construction stage of the Combwich Wharf. With advice from Natural England, we have strongly advised the competent authorities (SoS and MMO) to make sure that further measures are built into the project to protect migratory and other birds by introducing a 'Shelduck and non-breeding birds mitigation and monitoring scheme'.

Providing the requirements and conditions of the Development Consent Order reflect the intent set out above, and in the appropriate assessment, it is reasonable to conclude that adverse effects will be avoided.

We will review the requirements of the Development Consent Order for Hinkley Point C, if granted by the Secretary of State for Energy and Climate Change, to confirm that when taken together with the conditions of our permits they are sufficient to maintain the conclusions of the appropriate assessment.

The technical sections of the appropriate assessment include detailed evidence and our reasons for the conclusions above. Please refer to Hinkley Point C Appropriate Assessment for related environmental permits (Environment Agency, 2013).

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