The Planning Inspectorate
Yr Arolygiaeth Gynllunio

SCOPING OPINION:

Proposed Hinkley Point C New Nuclear Power Station Material Change 1 Application

Case Reference: EN010102

Adopted by the Planning Inspectorate (on behalf of the Secretary of State) pursuant to Regulation 10 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

03 May 2022

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1. INTRODUCTION

1.0.1 On 23 March 2022, the Planning Inspectorate (the Inspectorate) received an application for a Scoping Opinion from NNB Generation Company (HPC) Limited (the Applicant) under Regulation 10 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) for the proposed Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Changes). The Applicant notified the Secretary of State (SoS) under Regulation 8(2)(b) of those regulations that they propose to provide an Environmental Statement (ES) in respect of the Proposed Changes and by virtue of Regulation 6(2)(a), the Proposed Changes are 'EIA development'.

1.0.2 The Applicant provided the necessary information to inform a request under EIA Regulation 10(3) in the form of a Scoping Report, available from:

http://infrastructure.planninginspectorate.gov.uk/document/EN010102-000081

1.0.3 This document is the Scoping Opinion (the Opinion) adopted by the Inspectorate on behalf of the SoS. This Opinion is made on the basis of the information provided in the Scoping Report, reflecting the Proposed Changes as currently described by the Applicant. This Opinion should be read in conjunction with the Applicant's Scoping Report.

1.0.4 The Inspectorate has set out in the following sections of this Opinion where it has / has not agreed to scope out certain aspects / matters on the basis of the information provided as part of the Scoping Report. The Inspectorate is content that the receipt of this Scoping Opinion should not prevent the Applicant from subsequently agreeing with the relevant consultation bodies to scope such aspects / matters out of the ES, where further evidence has been provided to justify this approach. However, in order to demonstrate that the aspects / matters have been appropriately addressed, the ES should explain the reasoning for scoping them out and justify the approach taken.

1.0.5 Before adopting this Opinion, the Inspectorate has consulted the 'consultation bodies' listed in Appendix 1 in accordance with EIA Regulation 10(6). A list of those consultation bodies who replied within the statutory timeframe (along with copies of their comments) is provided in Appendix 2. These comments have been taken into account in the preparation of this Opinion.

1.0.6 The Inspectorate has published a series of advice notes on the National Infrastructure Planning website, including Advice Note 7: *Environmental Impact Assessment: Preliminary Environmental Information, Screening and Scoping* (AN7). AN7 and its annexes provide guidance on EIA processes during the pre-application stages and advice to support applicants in the preparation of their ES.

1.0.7 Applicants should have particular regard to the standing advice in AN7, alongside other advice notes on the Planning Act 2008 (PA2008) process, available from:

https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/

1.0.8 This Opinion should not be construed as implying that the Inspectorate agrees with the information or comments provided by the Applicant in their request for an opinion from the Inspectorate. In particular, comments from the Inspectorate in this Opinion are without prejudice to any later decisions taken (eg on formal submission of the application) that any development identified by the Applicant is necessarily to be treated as part of a Nationally Significant Infrastructure Project (NSIP) or Associated Development or development that does not require development consent.

2. OVERARCHING COMMENTS

2.1 Description of the Proposed Changes

(Scoping Report Section 2)

ID	Ref	Description	Inspectorate's comments
2.1.1	2.1.54 & Appendix A	Equipment Storage Building	The Scoping Report notes that as a result of changes proposed to the Interim Spent Fuel Storage (ISFS) the Access Control Building has been removed and a new Equipment Storage building would be constructed. Information on the dimensions of the building is limited to the plans in Appendix A of the Scoping Report. The ES should include the dimensions of the building and provide a justification for the location chosen.
2.1.2	Appendix A, Drawing HINK-A1-SL-00-GA-011	Sluice gate storage	Appendix A of the Scoping Report shows four locations identified as 'Sluice gate storage'. The Scoping Report does not explain why two storage locations are required per Unit. Furthermore, there is no explanation as to why the buildings have different dimensions. The ES should clearly explain the dimensions of these components and their use.
2.1.3	Section 2 and Appendix A	Meteorological Mast	The Scoping Report does not provide any information on the compound required around the meteorological mast. The ES should include parameters for the compound and its components.
2.1.4	2.1.35 – 2.1.37 2.1.58 – 2.1.60	Alternatives	The Scoping Report summarises the alternatives that have been considered in relation to each of the Proposed Changes. The ES should include a section on the alternatives which have been considered for each of the Proposed Changes and not just the Acoustic Fish Deterrent (AFD). Where supporting evidence has

ID	Ref	Description	Inspectorate's comments
	2.1.66 – 2.1.68 2.1.74 – 2.1.76 2.1.87		been relied on (such as the AFD Optioneering Report) this should be included in annexes to the ES. In relation to the AFD, the section on alternatives should address the potential use of Remotely Operated Vehicles (ROV) during maintenance and provide a justification as to why use of ROV is not considered to be a feasible alternative.

2.2 EIA Methodology and Scope of Assessment

(Scoping Report Sections 3, 6 and 7)

ID	Ref	Description	Inspectorate's comments
2.2.1	3.1.5	Cumulative Impact	The Scoping Report notes that 'major applications within the locality' will be identified. The Inspectorate considers that the cumulative effects assessment should consider all other projects with zones of influence which overlap with the zones of influence of the Proposed Changes. Where possible, the Applicant should seek agreement with stakeholders (including the relevant local planning authorities, the Environment Agency (EA) and the Marine Management Organisation (MMO) on the developments that should be included in the cumulative effects assessment.
2.2.2	3.1	Baseline conditions	Paragraph 3.1.1 of the Scoping Report states that the assessments in the ES will consider the current and future baseline plus the baseline identified within the original ES for the Hinkley Point C Development Site. However, the wording of the aspect chapters contradicts this statement, with Chapters 8 and 9 both appearing to refer to the baseline in the original ES rather

ID	Ref	Description	Inspectorate's comments
			than a baseline which reflects the existing situation (see sections 3.1 and 3.2 of this report for more detailed comments). The Inspectorate considers that the approach outlined in paragraph 3.1.1 is correct and the assessments in the ES should consider both the baselines in the original ES and the current baseline to allow an understanding of how the environment has changed as construction proceeds. The ES should clearly explain how the non-material changes and the works consented under other planning regimes have been considered in the baseline.
2.2.3	7.6	Transboundary	The Inspectorate on behalf of the SoS has considered the Proposed Change and concludes that the Proposed Change is unlikely to have a significant effect either alone or cumulatively on the environment in a European Economic Area State. In reaching this conclusion the Inspectorate has identified and considered the Proposed Development's likely impacts including consideration of potential pathways and the extent, magnitude, probability, duration, frequency and reversibility of the impacts. The Inspectorate considers that the likelihood of transboundary effects resulting from the Proposed Change is so low that it does not warrant the issue of a detailed transboundary screening. However, this position will remain under review and will have regard to any new or materially different information coming to light which may alter that decision. Note: The SoS' duty under Regulation 32 of the 2017 EIA Regulations continues throughout the application process. The Inspectorate's screening of transboundary issues is based on the relevant considerations specified in the Annex to its Advice Note Twelve, available on our website at

ID	Ref	Description	Inspectorate's comments
			http://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/

3. ENVIRONMENTAL ASPECT COMMENTS

3.1 Marine Ecology

(Scoping Report Section 9, Original ES Chapter 19)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.1.1	Table 8-1	Impacts on the ISFS, Meteorological Mast, Hinkley Point Substation and Sluice Gate Storage Structures	The Inspectorate agrees that these matters can be scoped out of the assessment as there are unlikely to be pathways which could give rise to significant effects on marine ecological receptors.

ID	Ref	Description	Inspectorate's comments
3.1.2	5.5.10 & Table 9-2	Marine planning policy	As the ES is intended to consider effects on the fish populations within the Severn Estuary, it should also take the requirements of the Welsh National Marine Plan into account.
3.1.3	9.3.1	Guidance to be relied on	It is noted that the assessment of effects on marine ecology will be based on the 2018 guidance from the Chartered Institute of Ecology and Environmental Management (CIEEM). The Scoping Report states that the CIEEM guidance notes the importance of professional judgement. Where professional judgement is used in the assessments, the ES must clearly explain the criteria and/or reasoning which supports that professional judgement.
3.1.4	9.4.4	Study area for marine mammals	The Scoping Report states that the study area currently mirrors that for fish populations but may be extended if a potential effect pathway is identified. The ES must either address any potential effects on the harbour porpoise population of the Bristol Channel (including effects

ID	Ref	Description	Inspectorate's comments
			on the Bristol Channel Approaches Special Area of Conservation (SAC)) or explain why such effects would not arise. The study areas for fish, bird and marine mammals should be agreed with the relevant stakeholders wherever possible.
3.1.5	9.5.12 – 9.5.14	Current and future baseline	The Scoping Report states that no additional baseline surveys are proposed and instead the data supporting the previous ES and subsequent studies will be relied on, despite the statements in paragraph 9.5.13 that long-term monitoring has shown shifts in the fish assemblage in the vicinity of Hinkley Point. The reports in Appendix B of the Scoping Report appear to largely rely on the data collected during the Comprehensive Impingement Monitoring Programme (CIMP) in 2009/10. The Inspectorate is concerned that this data is now at least 12 years old and questions whether it still reflects the situation at Hinkley Point. The ES should either contain an updated baseline or, where possible, demonstrate agreement with relevant stakeholders (particularly the Marine Management Organisation (MMO), the Environment Agency (EA) and Natural England (NE)) that the baseline data used in the Appendix B reports is appropriate for the assessment. The updated baseline should also include any new designated sites, (including Marine Conservation Zones) within the zone of influence of the Proposed Development.
3.1.6	Table 9-3	Likely significant effects (LSE)	The potential for LSE from fish impingement is only flagged in relation to effects on water quality and not on the fish population itself. The ES should present an assessment of the effects on relevant fish populations.
3.1.7	9.8	Assessment methodology	The Scoping Report does not state this explicitly, but it appears that the assessments in the ES will rely on the various studies contained in Appendix B. The Inspectorate notes that these studies were completed between 2018 – 2020. The ES should include a

ID	Ref	Description	Inspectorate's comments
			justification as why the methodologies used in these assessments are still considered to be appropriate. The ES should demonstrate that the methods used to undertake the assessment have been agreed with the relevant stakeholders where possible. In the event that such agreement is not forthcoming, the ES should include separate assessments using the Applicant's preferred method as well as that recommended by stakeholders.
3.1.8	NA	Confidential Annexes	Public bodies have a responsibility to avoid releasing environmental information that could bring about harm to sensitive or vulnerable ecological features. Specific survey and assessment data relating to the presence and locations of species such as badgers, rare birds and plants that could be subject to disturbance, damage, persecution, or commercial exploitation resulting from publication of the information, should be provided in the ES as a confidential annex. All other assessment information should be included in an ES chapter, as normal, with a placeholder explaining that a confidential annex has been submitted to the Inspectorate and may be made available subject to request.

3.2 Landscape and Visual

(Scoping Report Section 10, Original ES Chapter 22)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.2.1	10.5.3	Effects from the AFD, Hinkley Point Substation, and sluice gates storage	The Inspectorate notes that the Hinkley Point C substation is to become a permanent building and the sluice gates are new structures. However, the Inspectorate agrees that these matters can be scoped out from the landscape and visual impact assessment in the ES as additional significant landscape and visual effects are unlikely to arise due to their location and context of the wider Hinkley Point development site.
3.2.2	10.5.5	Effects on the Vale of Taunton and Quantock Fringes National Character Area (NCA)	The Inspectorate agrees that this matter can be scoped out due to the scale of the Proposed Change in the context of the wider Hinkley Point development site and its relationship to the NCA.
3.2.3	10.5.8	Effects on the Wall Common and Coast Local Landscape Character Area (LLCA)	The Inspectorate agrees that, considering the Proposed Changes and the location as shown on ES Figures 22.6 and 22.7, Wall Common and Coast LLCA is located at distance from the Proposed Changes and therefore the Proposed Changes are unlikely to give rise to likely significant effects at this location.
3.2.4	10.5.9	Effects on the Blue Anchor to St. Audries Bay Local Seascape Character Area (LSCA), Burnham-on-Sea to Brean Down LSCA and Brean Down LSCA	The Inspectorate agrees that, considering the scale of the Proposed Changes and the distance to the LSCAs as shown on ES Figure 22.6, additional LSE are unlikely to arise. This matter can be scoped out of further assessment.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.2.5	10.5.11	Effects on LLCA in the Sedgemoor district other than the Quantock Hills LLCA	The Scoping Report seeks to scope this matter out on the grounds that the distance from the Proposed Changes and the scale of change would not lead to LSE on the other LLCA. The Inspectorate agrees that the changes are unlikely to give rise to LSE on the LLCA and therefore this matter can be scoped out of further assessment.
3.2.6	Table 10-3 & 10.5.24	Effects on Areas of Outstanding Scenic Interest	The Scoping Report states that an assessment of effects on these areas is not necessary as NE no longer define these areas. The Inspectorate notes that none of the responses from consultees have raised concerns about this approach and agrees that this matter can be scoped out of further assessment.
3.2.7	10.5.13	Effects on Fairfield Historic Park and Garden and Nether Stowey Conservation Area resulting from the Proposed Changes	The Scoping Report seeks to scope this matter out on the grounds that there are unlikely to be views to the ISFS from either receptor. On the basis of the Site layout plan in Appendix A, the Inspectorate agrees that LSE are unlikely to arise and this matter can be scoped out of further assessment.
3.2.8	10.5.17 & Table 10-5	Effects on principal viewpoints (VP) 1 – 10 and Fairfield Historic Park and Garden VP7 resulting from the Proposed Changes	The Scoping Report states that while the meteorological mast would be visible from these viewpoints, the change in location would not alter the character of the view. The ISFS may be visible during construction but would be screened during operation by the Nuclear Island and the Conventional Island structures. The Inspectorate has reviewed the photomontages submitted with the original ES and the revised Site layout plan in Appendix A of the Scoping Report and is content that these viewpoints can be scoped out of further assessment, apart from VP7. In relation to VP7, while Table 10-5 states that this viewpoint would be scoped out, para 10.5.13 of the Scoping Report states that the effects on the setting of Stogursey Conservation Area have been

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			scoped in and will be considered under VP7. On this basis, the Inspectorate does not consider that this viewpoint can be scoped out from further assessment. Accordingly, the ES should include an assessment of the effects on this viewpoint or evidence demonstrating the absence of an LSE and agreement with the relevant stakeholders, where possible.
3.2.9	10.5.21	Views at dusk	The Scoping Report states that the views at dusk recorded for the original ES would not be included in the assessment of the Proposed Changes as the lighting design for the development will not be amended. The Inspectorate agrees that this matter can be scoped out of further assessment.
3.2.10	Table 10-5	Principal viewpoints (VP) 12,15,17, 21 – 25, 27, 29 – 42 Secondary viewpoints S1 – S6 Nether Stowey Conservation Area VP24	The Scoping Report states that the assessment in the original ES for effects during construction and years 1 and 15 of operation concluded that residual effects would be of minor significance and that the scale of the Proposed Changes would not result in effects of greater significance. The secondary viewpoints are also considered to be too far from the Proposed Changes for the scale of change to affect the significance of the previously assessed effects. The Inspectorate has reviewed the figures submitted with the original ES and the revised Site layout plan in Appendix A of the Scoping Report and is content that these viewpoints can be scoped out of further assessment. However, the assessment should also include a viewpoint which represents the views from the National Coastal Footpath (the Applicant's attention is drawn to the comments from Somerset West and Taunton Council and Stogursey Parish Council in Appendix 2 of this report).

ID	Ref	Description	Inspectorate's comments
3.2.11	10.4.2	Study area	Paragraph 10.4.2 of the Scoping Report states that an 8km study area will be used for the landscape and visual impact assessment however paragraph 10.4.4 states that a new zone of theoretical visibility will be determined for the ISFS as part of the Preliminary Environmental Information Report. It is not clear from the wording of the Scoping Report whether the study area is 8km or will be determined through this later assessment. The ES should clearly identify the final study area and provide justification for this, including agreement with relevant stakeholders where possible.
3.2.12	10.5.22	Current baseline	The Inspectorate notes that the baseline to be used in the assessment will be the baseline in the original ES to allow a 'like for like' comparison. However, the Scoping Report also states that the changes resulting from the four previous non-material change applications will be taken into consideration when assessing new impacts from the ISFS; paragraph 3.1.2 of the Scoping Report states that the four non-material changes will form part of the current baseline. These two positions appear to contradict each other. It is not clear from the Scoping Report if the non-material changes would be included in an updated baseline or would be treated as cumulative changes alongside the Proposed Changes. The ES must provide a clear definition of the baseline and an explanation as to how the non-material changes have been accounted for. Effects from the changes to the meteorological mast should also be accounted for, in addition to the changes to the ISFS.
3.2.13	10.8	Proposed assessment methodology	The assessment of effects should be supported by revised photomontages which reflect the effects of the Proposed Changes.

3.3 Other Matters and Aspects to be Scoped Out

(Scoping Report Section 8)

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.3.1	Table 7-1 & Section 7.2 (original ES Chapter 7)	Spent fuel and radioactive waste management	The Scoping Report states that there is no change to the volume of spent fuel held by the ISFS and notes the removal of the vent stack reduces the risk of any potential emissions. On this basis it is considered that additional LSE are unlikely and this matter can be scoped out of further assessment.
3.3.2	Table 7-1 (original ES Chapter 8)	Conventional waste management	The Inspectorate agrees that the changes in conventional waste arisings from changes in the design of the ISFS, retention of the substation and installation of the new sluice gate structures are, on balance, unlikely to lead to additional LSE beyond the worst-case scenario assessed in the original ES. The Scoping Report states that targets set in the original ES of 90% of waste being reused would also be adhered to for the material change. On this basis, this aspect can be scoped out of further assessment in the ES.
3.3.3	Table 7-1 (original ES Chapter 9)	Socio-economics: • construction employment; • labour market and supply chain; • accommodation supply; • owner occupied housing; • private rented sector; • tourist sector;	The Inspectorate agrees that the scale of the Proposed Changes as set out in the Scoping Report are unlikely to give rise to significant effects over and above those assessed in the original ES. This aspect can be scoped out of further assessment in the ES.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
		• latent sector; • population dynamics; • public services; and • operational employment, supply chain and multiplier	
3.3.4	Table 7-1 (original ES Chapter 9)	Socio-economics: Agricultural land use impacts	The Inspectorate agrees that no additional agricultural land is required to facilitate the Proposed Changes and therefore this matter can be scoped out of further assessment.
3.3.5	Table 7-1 (original ES Chapter 9)	Socio-economics: Specific locational impacts	The Inspectorate agrees that the Proposed Changes are unlikely to give rise to new or additional significant effects on individual businesses. It is noted that any new or different significant effects identified by the ES would trigger an assessment of effects on business receptors which would be included in the landscape and visual assessment. If this occurs, the assessment in the ES must make it clear how the socio-economic effects have been assessed as distinct from the landscape and visual impacts. The Inspectorate agrees that apart from this point, socio-economic effects can be scoped out of further assessment in the ES.
3.3.6	Table 7-1 (original ES Chapter 10)	Transport	The Inspectorate notes comments in the Scoping Report, however without information provided on the current number of trips and the proposed increase, the Inspectorate is unable to scope this aspect out at this stage. Accordingly, the ES should include an assessment of this aspect or evidence demonstrating the absence of an LSE and agreement with the relevant stakeholders that they agree with this approach. The ES should also consider cumulative effects with other

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			planning applications would arise which result in increased trips to the Hinkley Point C site.
3.3.7	Table 7-1 (original ES Chapter 11)	Noise and vibration	The Inspectorate agrees that the Proposed Changes are unlikely to significantly alter operational noise levels. During construction the Scoping Report acknowledges that the Proposed Changes may give rise to temporary noise impacts, however these are unlikely to be materially different from those assessed in the original ES. This aspect can be scoped out of further assessment in the ES.
3.3.8	Table 7-1 (original ES Chapter 12)	Air quality	The Inspectorate agrees that the Proposed Changes will not result in significantly different air quality impacts from those assessed in the original ES. This aspect can be scoped out of further assessment.
3.3.9	Table 7-1 (original ES Chapter 13)	Soils and land use	The Inspectorate agrees that this aspect can be scoped out of further assessment, on the basis that the Proposed Changes are located within existing development areas that have been subject to an assessment of soils and land use effects as part of the original ES.
3.3.10	Table 7-1 (original ES Chapter 14)	Geology and land contamination	The Scoping Report states that the Proposed Changes would be limited to areas of land (Building Development Areas East and West) which were assessed in the original ES. There is known ground contamination present in the ground in Building Development Area West. As the footprint of the ISFS would increase over that assessed in the ES, there is potential for additional areas of contaminated soil to be affected. Mitigation for dealing with contaminated land has already been secured through the Environmental Management and Monitoring Plans in Annex 3 of the original ES. On this basis the Inspectorate agrees that new or additional LSE are unlikely and this matter can be scoped out of further assessment.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			The Scoping Report also states that the change from wet to dry storage of fuel in the ISFS represents Best Available Technology and would not lead to additional land contamination from increased radioactive discharges. The Inspectorate agrees that this matter can be scoped out of further assessment.
3.3.11	Table 7-1 (original ES Chapter 15)	Groundwater	The Scoping Report states that the Proposed Changes mean that the ISFS would no longer include a subsurface structure so the extent of dewatering would be reduced. The magnitude of change is not expected to be significant in the context of construction of the Hinkley Point C development. However, the Scoping Report states that it is assumed that embedded mitigation will be reviewed to account for the change so that potential structural impacts are avoided. Effects from the sluice gates on groundwater are not expected to change the magnitude of effects assessed in the original ES. The Inspectorate does not consider that the Scoping Report has provided sufficient evidence to support these statements. Accordingly, the ES should include an assessment of the effects on this matter or evidence demonstrating the absence of an LSE and agreement with the relevant stakeholders that they agree with this approach. The Inspectorate agrees that the Proposed Changes affecting the meteorological mast and the substation are unlikely to give rise to new or additional LSE beyond those reported in the original ES. These matters can be scoped out of further assessment.
3.3.12	Table 7-1 (original ES Chapter 16)	Surface water	The Inspectorate agrees that the Proposed Changes are unlikely to lead to new or additional significant effects on surface water since the mitigation measures described in Appendix 2A of the original ES would deal with any additional run-off. This matter can be scoped out of further assessment in the ES.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
3.3.13	Table 7-1 (original ES Chapter 17)	Coastal hydrodynamics and geomorphology	The Inspectorate agrees that the removal of the AFD is the only element of the Proposed Changes which is likely to lead to effects on this aspect. It does not appear likely that removal of the AFD would lead to new or additional significant effects not already assessed in the original ES. This aspect can be scoped out of further assessment in the ES.
3.3.14	Table 7-1 (original ES Chapter 18)	Marine water and sediment quality	The Inspectorate notes the concerns of the Marine Management Organisation (MMO) that changes in the quantity of dead fish discharged could affect marine water quality (see Appendix 2 of this report). The Inspectorate does not agree that this matter can be scoped out of further assessment. Accordingly, the ES should include an assessment of the effects arising from discharge of dead fish or evidence demonstrating the absence of an LSE and agreement with the relevant stakeholders.
3.3.15	Table 7-1 (original ES Chapter 20)	Terrestrial ecology and ornithology	The Inspectorate agrees that the Proposed Changes would be unlikely to give rise to new or additional LSE to terrestrial plants, habitats, invertebrates and birds using terrestrial and intertidal habitats and these matters can be scoped out of further assessment. In relation to piscivorous birds, the Scoping Report seeks to scope these species out of further assessment on the grounds that the additional entrainment or impingement of fish without the AFD would affect less than 0.1% of fish stocks. As noted in section 3.1 of this report, the Inspectorate has raised queries about the assessment of effects on fish populations. It is therefore premature to exclude this matter from further assessment. Accordingly, the ES should include an assessment of this matter or evidence demonstrating the absence

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
			of an LSE and agreement with the relevant stakeholders that they agree with this approach.
3.3.16	Table 7-1 & Section 7.3 (original ES Chapter 21)	Radiological	The Inspectorate agrees to scope this aspect out of further assessment as the Proposed Changes are unlikely to increase emissions and would be regulated by the Radioactive Substances Regulation Permit. The Scoping Report also notes that the removal of the flue on the spent fuel storage facility further reduces the likelihood of any emissions.
3.3.17	Table 7-1 (original ES Chapter 23)	Historic environment	The Scoping Report states that the Proposed Changes do not change the assessment of effects presented in the original ES. The Inspectorate agrees that new or additional significant effects are unlikely to arise. This matter can be scoped out of further assessment in the ES.
3.3.18	Table 7-1 (original ES Chapter 24)	Offshore and intertidal archaeology	The Inspectorate agrees that it is unlikely that there would be new or additional significant effects on marine and intertidal archaeology as a result of the Proposed Changes compared to those assessed in the original ES. This aspect can be scoped out of further assessment in the ES.
3.3.19	Table 7-1 (original ES Chapter 25)	Amenity and recreation: • PRoW (HPC Development Site, C182 Wick Moor Drove, off-site highway improvements) • Sports and recreation facilities (HPC Development Site, C182 Wick Moor Drove,	It is noted that the Scoping Report states that if new or materially different LSE are identified from the landscape and visual impact assessment then effects on users of amenity or recreational areas would be considered. On this basis the Inspectorate agrees that this aspect can be scoped out of further assessment in the ES.

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
		off-site highways improvements) • Open Access land and Public Open Space (HPC Development Site, C182 Wick Moor Drove, off-site highway improvements)	
3.3.20	Table 7-1 (original ES Chapter 26)	Shipping and navigation	The Inspectorate agrees that there is no pathway by which the Proposed Changes could lead to new or additional LSE on shipping and navigation. This matter can be scoped out of further assessment.
3.3.21	Table 7-1 (no chapter in the original ES)	Population and human health	It is noted that the original ES contained various assessments of impacts on population and human health and a stand-alone health assessment was also produced. These documents considered potential effects and identified relevant mitigation. The Inspectorate agrees that the Proposed Changes would be unlikely to give rise to any new or additional LSE. The Inspectorate notes that if any new or materially different significant effects are identified through the landscape and visual impact assessment, population and human health effects would be considered as part of that assessment. If this occurs, the assessment in the ES must make it clear how the population and human health effects have been assessed as distinct from the landscape and visual impacts. The Inspectorate agrees that apart from this point, population and human health effects can be scoped out of further assessment in the ES.
3.3.22	Section 7.4	Climate change	The Inspectorate notes that the increase in the footprint of the ISFS would lead to additional greenhouse gas (GHG) emissions of 89,000

ID	Ref	Applicant's proposed matters to scope out	Inspectorate's comments
	Table 7-1 (no chapter in the original ES)		tonnes of CO_2 equivalent. The total estimated carbon emissions for the construction of the Hinkley Point C power station site are stated to be approximately 8,624,838 tonnes of CO_2 equivalent, with GHG emissions from other elements of the Proposed Changes being small or negligible. The Inspectorate agrees that the additional emissions associated with the Proposed Changes result in a proportionately small increase in the volume of GHG emissions. The limited nature of the Proposed Changes would not significantly increase the vulnerability of the Hinkley Point C power station site to climate change effects such as increased flood risk. The Inspectorate agrees that, set against the Hinkley Point C development as a whole, the effects associated with the Proposed Changes are unlikely to be significant. This matter can be scoped out of further assessment in the ES.
3.3.23	Table 7-1 Section 7.5 (no chapter in the original ES)	Major accidents and disasters	The Inspectorate is content that the Proposed Changes will be required to adhere to the same strict legal requirements governing the construction and operation of nuclear power stations and therefore this aspect can be scoped out the ES.
3.3.24	Table 7-1 (original ES Volume 11)	Project-wide cumulative effects	It is noted that the ES will include an updated cumulative effects assessment which will consider interactions with other developments or projects. The Inspectorate agrees that the Proposed Changes are unlikely to give rise to any new or additional project-wide cumulative effects above those assessed in the original ES. This matter can be scoped out of further assessment in the ES.

APPENDIX 1: CONSULTATION BODIES FORMALLY CONSULTED

TABLE A1: PRESCRIBED CONSULTATION BODIES[1]

SCHEDULE 1 DESCRIPTION	ORGANISATION
The Health and Safety Executive	Health and Safety Executive
The National Health Service Commissioning Board	NHS England
The relevant Clinical Commissioning Group	NHS Somerset Clinical Commissioning Group (CCG)
Natural England	Natural England
The Health and Safety Executive	Health and Safety Executive
The Historic Buildings and Monuments Commission for England	Historic England (Onshore)
The relevant fire and rescue authority	Devon and Somerset Fire and Rescue Service
The relevant police and crime commissioner	Avon and Somerset Police and Crime Commissioner
The relevant parish council(s) or, where the application relates to land [in] Wales or Scotland, the relevant community council	Stogursey Parish Council
The Environment Agency	The Environment Agency
The Maritime and Coastguard Agency	Maritime & Coastguard Agency
The Marine Management Organisation	Marine Management Organisation (MMO)
The Relevant Highways Authority	Somerset County Council
The relevant strategic highways company	National Highways
The relevant internal drainage board	Parret Internal Drainage Board

[1] Schedule 1 of The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009 (the 'APFP Regulations')

SCHEDULE 1 DESCRIPTION	ORGANISATION
Trinity House	Trinity House
United Kingdom Health Security Agency, an executive agency of the Department of Health and Social Care	United Kingdom Health Security Agency
The Crown Estate Commissioners	The Crown Estate
The Forestry Commission	The Forestry Commission
The Secretary of State for Defence	Ministry of Defence
The Office for Nuclear Regulation (the ONR)	The Office for Nuclear Regulation (the ONR)

TABLE A2: RELEVANT STATUTORY UNDERTAKERS[2]

STATUTORY UNDERTAKER	ORGANISATION
The relevant Clinical Commissioning Group	NHS Somerset Clinical Commissioning Group (CCG)
The National Health Service Commissioning Board	NHS England
The relevant NHS Foundation Trust	South Western Ambulance Service NHS Foundation Trust
Dock and Harbour authority	Hinkley Point C Harbour Authority
Lighthouse	Trinity House
Universal Service Provider	Royal Mail Group
The relevant Environment Agency	The Environment Agency
The relevant water and sewage undertaker	Wessex Water
The relevant public gas transporter	Cadent Gas Limited
	Last Mile Gas Ltd

[2] 'Statutory Undertaker' is defined in the APFP Regulations as having the same meaning as in Section 127 of the Planning Act 2008 (PA2008)

STATUTORY UNDERTAKER	ORGANISATION
	Energy Assets Pipelines Limited
	ES Pipelines Ltd
	ESP Networks Ltd
	ESP Pipelines Ltd
	ESP Connections Ltd
	Fulcrum Pipelines Limited
	Harlaxton Gas Networks Limited
	GTC Pipelines Limited
	Independent Pipelines Limited
	Indigo Pipelines Limited
	Leep Gas Networks Limited
	Murphy Gas Networks limited
	Quadrant Pipelines Limited
	Squire Energy Limited
	National Grid Gas Plc
	Scotland Gas Networks Plc
	Southern Gas Networks Plc
	Wales and West Utilities Ltd
The relevant electricity generator with CPO Powers	EDF Energy Nuclear Generation Limited
	NNB Generation Company (HPC) Limited
The relevant electricity distributor with CPO Powers	Eclipse Power Network Limited
	Energy Assets Networks Limited
	ESP Electricity Limited
	Forbury Assets Limited
	Fulcrum Electricity Assets Limited

STATUTORY UNDERTAKER	ORGANISATION
	Harlaxton Energy Networks Limited
	Independent Power Networks Limited
	Indigo Power Limited
	Last Mile Electricity Ltd
	Leep Electricity Networks Limited
	Murphy Power Distribution Limited
	The Electricity Network Company Limited
	UK Power Distribution Limited
	Utility Assets Limited
	Vattenfall Networks Limited
	Western Power Distribution (South West) Plc
The relevant electricity transmitter with CPO Powers	National Grid Electricity Transmission Plc
	National Grid Electricity System Operator Limited

TABLE A3: SECTION 43 LOCAL AUTHORITIES (FOR THE PURPOSES OF SECTION 42(1)(B))[3]

LOCAL AUTHORITY[4]
North Devon Council
East Devon District Council
Mid Devon District Council
Somerset West and Taunton Council
South Somerset District Council

[3] Sections 43 and 42(B) of the PA2008

[4] As defined in Section 43(3) of the PA2008

LOCAL AUTHORITY[4]
Sedgemoor District
Exmoor National Park
North Somerset Council
Dorset Council
Bath and North East Somerset Council
Wiltshire Council
Devon County Council
Somerset County Council

TABLE A4: NON-PRESCRIBED CONSULTATION BODIES

ORGANISATION
Royal National Lifeboat Institution

APPENDIX 2: RESPONDENTS TO CONSULTATION AND COPIES OF REPLIES

CONSULTATION BODIES WHO REPLIED BY THE STATUTORY DEADLINE:
Bath and North East Somerset Council
Devon County Council
Devon and Somerset Fire and Rescue Service
Dorset Council
Environment Agency
ESP Utilities Group Ltd
Historic England
Marine Management Organisation
Maritime and Coastguard Agency
Mid Devon District Council
National Highways
Natural England
North Devon Council
North Somerset Council
Sedgemoor District Council
Somerset County Council
Somerset Drainage Boards Consortium
Somerset West and Taunton Council
Stogursey Parish Council
Trinity House
UK Health Security Agency

Bath & North East Somerset Council

Planning Services
Lewis House, Manvers Street, Bath, BA1 1JG
Telephone: [redacted]
Development_management@bathnes.gov.uk
www.bathnes.gov.uk

Fax: [redacted]
DX: 8047 (Bath)
Date: 14th April 2022
Our Ref: 22/01433/CONSLT

The Planning Inspectorate
C/O Helen Lancaster

Dear Sir/Madam

Town and Country Planning Act 1990

Address to which the proposal relates: Application No: **22/01433/CONSLT**
Planning Applications Outside BANES Planning Bath Bath And North East Somerset

Description of proposal: **Consultation under the 2017 EIA Regulations in regards to Proposed Hinkley Point C New Nuclear Power Station Material Change 1**

Name of Applicant: **The Planning Inspectorate**

With reference to the above consultation request, Bath and North East Somerset Council would like to make the following comments:

Bath and North East Somerset Council has no comments to make on this application.

Yours faithfully

Simon de Beer

Head of Planning

(NOCONZ)

From: [redacted]
To: HPCNuclear
Cc: [redacted]
Subject: Planning Proposal Reference EN010102-000084
Date: 20 April 2022 18:18:29

Dear Sir/Madam,

In respect of the planning proposal EN010102-000084 relating to Material Changes at Hinkley Point C Nuclear Power Station, Devon and Somerset Fire and Rescue Service has no comment to make.

Your faithfully,

Malcolm Carmichael

Malcolm Carmichael CMIFireE
DSFRS Strategic Liaison Officer Hinkley Point C
[redacted]
[redacted]@dsfire.gov.uk

Planning, Transportation and Environment

Sent by email

County Hall
Topsham Road
Exeter
EX2 4QD

Tel: [redacted]
Email: planning@devon.gov.uk

Our Ref: CP/SCR/10031/2022
Your Ref: EN010102-00008

19 April 2022

Dear Sir/Madam,

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11

Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development)

Scoping consultation and notification of the Applicant's contact details and duty to make available information to the Applicant if requested

Thank you providing the opportunity to comment on the report accompanying the request for a Scoping Opinion. It is understood that the Applicant is seeking to amend the following elements of the scheme consented under the DCO via an application for a material change to the Secretary of State summarised below:

- Removal of the requirement to install an acoustic fish deterrent system;
- Amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions;
- Relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building;
- Amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB); and
- Four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e. maintenance periods).

This response provides the formal view of Devon County Council and confirms we have no comments to make with regard to the information contained within the Scoping Report.

Please let me know if you need any further information or clarification.

Yours sincerely,

[redacted]

Mike Deaton

Chief Planner
Planning, Transportation and Environment

Application details

Ref: EN010102-000084	**Applicant:** Andrew Goodchild, NNB Generation Company (HPC) Ltd	**Case Officer:** N/A Planning Inspectorate.

Address: Hinkley Point C.
Description: Application by NNB Generation Company (HPC) Limited for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development).
Case Officer comments to Consultee:
Consultee: Sarah Barber – Senior Landscape Architect. Dorset Council.
Date: 20th April 2022
Has a Pre-application discussion taken place with you?: Yes / No

Support	
Support subject to condition(s)	
Unable to support	
No objection	
Request for further information	
Other	X

Summary

Thank you for consulting the Dorset Council Landscape Team on this Scoping consultation. I can confirm, that in this instance, that we will **not** be providing any comments.

Site description/context/significance

Main issues

The proposal

Filename:

Comments on proposal

No comments.

Policy consideration

Officer: Sarah Barber CMLI

Job Title: Senior Landscape Architect
Economic Growth & Infrastructure, Dorset Council.

Date: 20th April 2022

Filename:

Ms Helen Lancaster
Senior EIA and Land Rights Advisor
The Planning Inspectorate
3/18 Eagle Wing
Temple Quay House (2 The Square)
Temple Quay
Bristol
BS1 6PN

Our ref: WX/2022/136225/01-L01
Your ref: EN010102-000084

Date: 25 April 2022

Dear Ms Lancaster

EIA SCOPING OPINION - DEVELOPMENT CONSENT FOR THE HINKLEY POINT C NEW NUCLEAR POWER STATION MATERIAL CHANGE 1 (THE PROPOSED DEVELOPMENT) AT HINKLEY POINT C, BRIDGWATER

Thank you for consulting the Environment Agency on the above.

We offer the following comments:

Proposed removal of the Acoustic Fish Deterrent (AFD)
In the recent appeal to vary the Operational Water Discharge Activity permit for Hinkley Point C we have commented extensively on the scoping/ methodology of impact studies carried out by the applicant. A large proportion of these comments also apply to the scope and methodology for information relating to the EIA process. Please see the attached the Agency's closing statement to this appeal. For more detail please see appeal information can be found under reference APP/EPR/573. We look forward to working with the applicant to address our concerns.

Major accidents and hazards
Notwithstanding the above, we note the statements regarding scoping out major accidents and disasters. Acknowledging that this site is heavily regulated, to ensure an appropriate EIA, we would expect to see the applicant addressing foreseeable events which may occur within their EIA.

Proposed changes to Fuel Store
We have had a number of discussions with NNB Gen Co Ltd regarding the change from wet to dry Independent Spent Fuel Storage (ISFS). In our view, these discussions is adequately summarised in para 2.1.57 of the report. In parallel to any application to vary the existing DCO, we would expect an application to vary the Hinkley Point C (HPC) Radioactive Substances Regulation (RSR) permit.

Please do not hesitate to contact the undersigned direct should you have any further queries.

Yours sincerely

Mark Willitts
Sustainable Places - Planning Specialist

Direct dial [redacted]
e-mail [redacted]@environment-agency.gov.uk

End

ENVIRONMENTAL PERMITTING (ENGLAND & WALES) REGULATIONS 2016

APPEAL BY NNB GENERATION COMPANY (HPC) LIMITED

WATER DISCHARGE ACTIVITY AT HINKLEY POINT C, SOMERSET

PERMIT VARIATION APPLICATION RELATING TO ACOUSTIC FISH DETERRANT

Appeal Reference APP/EPR/573

CLOSING SUBMISSIONS
ON BEHALF OF THE
ENVIRONMENT AGENCY

Introduction

1. HPC will abstract huge volumes of water continuously for its lifespan of 60+ years. In doing so, it will impinge and entrain many fish. When he granted the development consent order ("**DCO**"),[1] the Secretary of State considered it necessary to impose conditions requiring the Appellant to provide an Acoustic Fish Deterrent ("**AFD**"). An AFD is designed to create an auditory behavioural cue to deter fish from swimming close to the intake and thereby reduce the risk of impingement. The Environment Agency ("**EA**") considers the AFD to be an essential piece of mitigation (in fact the AFD is the most important piece of mitigation for hearing species which make up the majority of the biomass in most seasons).

2. The focus of this appeal is the environmental consequence of constructing HPC without an AFD. It is common ground that the Appellant's permit variation application may only be granted if the Secretary of State is certain that the project without an AFD '*will not adversely affect the integrity of*' any protected sites: Regulation 63(5) Conservation of Habitats and Species Regulations 2017 ("**the Habitats Regulations**").

[1] CD 5.1.

3. The EA has set out its submissions on the meaning of "*integrity*" in Opening. Additional key points to note are that:

    a. In cross-examination Mr Goodwin agreed with the proposition that "*taking each qualifying feature in turn, if the conservation objectives for a feature will be undermined, site integrity is necessarily affected*";
    b. Recent Defra guidance lists relevant factors to consider when applying the integrity test.[2] In particular, it is highly relevant to consider the current conservation status of the site's designated features that might be affected by the proposal;[3]
    c. The guidance emphasizes the need to consider "*each potential effect… and how they might impact on the site's conservation objectives*" reaffirming the correctness of the EA's legal submission on the role of the conservation objectives in the integrity test;[4] and
    d. The guidance confirms the need to consider the "*extent, timing, duration, reversibility and likelihood of potential effects*".[5] In that regard, it is pertinent that this is a large scale infrastructure project with a 60+ year lifespan whose effects are not easily reversed.

4. It must be emphasized that the Appellant has not argued, let alone demonstrated, that the AFD would not provide effective mitigation. Rather, the Appellant says the AFD would be difficult to install and maintain. As Dr Jennings agreed, the real question for the Secretary of State is what is the consequence of constructing HPC without an AFD?

5. The EA, in agreement with Natural England ("**NE**") and Natural Resources Wales ("**NRW**") considers that it is not possible to be certain that the project minus an AFD will not adversely affect the integrity of the Severn Estuary SAC, the Severn Estuary Ramsar site, the River Wye SAC and the River Usk SAC. This is due to the effect on 7

[2] CD 12.21, p14 'how to assess effects on site integrity'.
[3] Ibid, 1st bullet point.
[4] Ibid, 2nd bullet point.
[5] Ibid, 3rd bullet point.

species of concern, namely: twaite shad, allis shad, Atlantic salmon, Atlantic cod, European seabass, Atlantic herring and whiting.[6]

6. That does not mean that HPC cannot proceed. The lawful way to reconcile the requirements of health and safety, the public benefits of the project and the need for environmental protection, is to use the derogation procedure specifically provided for in the Habitats Regulations. This would ensure that adequate compensatory measures are provided for the environmental harm that the project will cause. If the Secretary of State agrees with the EA, mindful of the Appellant's proposed construction timetable,[7] it is open to the Secretary of State to issue a "*minded to refuse*" letter and to allow the Appellant to advance a case for a derogation without the need for a fresh variation application.

Uncertainty and qualitative considerations

7. It should be recognized at the outset that both parties agree that there is uncertainty within the derivation of many of the parameters used within the quantitative assessment of impacts, and that "*where appropriate and quantitatively predicted, the effects of these uncertainties should be considered in the analysis*".[8]

8. Uncertainty in and of itself is not a reason for refusal. Indeed, the EA has been able to conclude that the project would not adversely affect the integrity of the protected sites in relation to many species (109 out of 117). Nevertheless, it is fundamental to the overall judgment, and the degree of precaution applied, that there remains considerable unquantifiable uncertainty about the likely entrapment impacts of HPC.

[6] It is common ground that this inquiry does not need to consider European eel (CD 6.5 Statement of Common Ground, para 4.2). The EA's Appropriate Assessment concluded that an adverse effect on the integrity of the protected sites could not be ruled out in relation to impacts on eel. That issue will be addressed if necessary through other regulatory processes.
[7] Dr O'Donnell says that retrofitting an AFD would have to be done by the end of 2021 and that if NNB lost this appeal it is his view that NNB "would need to seek alternative legal routes e.g. derogation": O'Donnell proof, para 8.17.
[8] CD 6.5 Statement of Common Ground, para 4.24.

9. First, there are significant uncertainties arising from the use of the RIMP and CIMP data sets to predict impingement losses associated with HPC.

10. In terms of the RIMP, this involved:[9]

    a. 6 hours of continuous sampling, from 2 out of 4 drum screens, on one day each month;
    b. Samples were collected during daylight on the ebb tide;[10]
    c. That resulted in 72 hours of sampling from 2 pumps per annum
    d. Thus, the sampling equates to only 0.41% of HPB's full abstraction volume over a year.[11]

11. Dr Masters explained that such infrequent sampling is likely to underestimate the effect of HPC on e.g. Atlantic salmon because salmon smolts migrate seasonally and in pulses, often at night. Migration may peak at particular points of the season in response to environmental conditions, and consequently there is every chance that the once monthly six hour daytime sample will not accurately represent the position. Plainly the RIMP was not designed to sample for salmon and Dr Masters rightly likened it to the RSPB Big Garden Birdwatch being conducted by asking one street to look at half of their garden at night for only a few minutes in order to estimate the bird population in a town.

12. The Appellant has also recognized this significant limitation of the RIMP data set. TR456 stated that:[12]

> "*The sampling frequency at 6 hours per month means that the RIMP survey under samples changes that happen over short periods of time e.g. the waves of sprat migration into and out of the Bristol Channel in November-January*".

13. That logic applies with equal, if not greater force, in relation to Atlantic salmon.

[9] CD 1.11, p39, para 4.1.
[10] NB the Appellant proposed an ebb tide bias in TR456 (CD 1.11), but it is agreed that there is no evidence to support an ebb tide bias when estimating impingement: see CD 6.5 Statement of Common Ground, para 4.12.
[11] Masters proof (salmon) para 6.2.4.
[12] CD 1.11, p40.

14. Stepping back, it is also significant that the Appellant commissioned the CIMP specifically because the RIMP was not a high enough resolution data set:[13]

> "*Whilst the RIMP programme has provided a useful dataset for interannual trend analysis, the CIMP survey was designed to provide an unbiased, high resolution dataset which would enable the seasonal fish community to be analysed in detail even for rare species*".

15. In terms of the CIMP survey undertaken over a 14-month period between 2009 and 2010, this involved:[14]
    a. Forty x 24 hour samples in a year;
    b. Sampling occurred 10 times each quarter;
    c. The sampling consisted of an 18 hour bulk sample, and six x 1 hour samples sorted independently;
    d. 7 of the 18hr bulk samples were not carried out due to a crane malfunction or miscommunication between station staff, and so the data from the 6 hourly samples acquired on those dates was extrapolated to create a 24 hour sample figure; and
    e. The sampling equates to less than 11% of the volume of water abstracted by HPB in a year.

16. The CIMP is now 11 years old and (save for continuing the RIMP until 2017) the Appellant has not collected any more recent, or higher resolution, data to inform this Appropriate Assessment. That is particularly significant given the next major uncertainty.

17. Secondly, the HPB and HPC intakes are in different locations and it is necessary to make assumptions about the fish communities near each intake. As the EA's Appropriate Assessment explained:[15]

[13] CD 1.11 (TR 456), p44, para 4.2.
[14] CD 7.1, pp3-4.
[15] CD 4.1, p24. There was a beam trawl survey, but this was flawed because a beam trawl is only a few feet off the seabed and not sampling the section of the water column that HPC will draw from.

> "*A key assumption in using the HBP information is that the HPC will entrain similar numbers of fish to HPB by volume of cooling water abstracted. This is actually unknown where there have been no site specific HPC surveys conducted.*"

18. The EA, SEI and other third parties have argued that more adults of some species might be present near the HPC intake, whereas Dr Jennings argues that fish using selective tidal transport are unlikely to encounter the HPC intake. Dr Jennings agreed that this is a known unknown and that opponents of the appeal were not merely speculating, but rather relying on scientific/ecological reasons why the fish population at HPC might differ from that at HPB.[16] In other words, there is reasonable scientific doubt about this issue.

19. This is not a case where opponents are relying on hypothetical risks. There is a clear and obvious issue on which the scientists reasonably differ. But we must not forget that the only reason there is scientific doubt is because the Appellant has refused to commission any surveys or monitoring to resolve the doubt. In particular:

    a. Cefas have been advising the Appellant since before the original DCO application, Cefas has experts in fish tagging and monitoring, and yet the Appellant has never instructed Cefas to undertake any tagging or other studies to discover what type of fish use the area around the HPC intake, or how and when fish use that area;
    b. The Appellant has even declined to support relevant investigations proposed by others. Mr Crundwell explained that Cefas lent the Unlocking the Severn Project 11 acoustic receivers in 2018 to help ground truth a Bristol Array of receivers, but subsequently Cefas took them back and deployed them in the north of England. He also explained that the Appellant refused to allow a receiver to be positioned near the proposed HPC intake location. Dr Jennings' suggestion that this was due to jetty construction was no answer because he agreed that acoustic receivers are small pieces of equipment that are commonly attached to buoys. Indeed, Dr O'Donnell said he wasn't aware of any

[16] As set out below, in the case of shad there is new empirical data that supports the EA's position.

engineering reason why an acoustic receiver could not have been deployed at the site of the HPC intake;

c. The provision of RIMP survey data ended in 2017 despite Dr O'Donnell explaining that the design optioneering for the AFD had concluded in 2017 that it was not feasible to install and maintain an AFD. It is remarkable that the RIMP study should cease shortly before this variation application was made.

20. The fact is there is no good reason why monitoring studies could not have been carried out to support this application. That would have provided the best scientific evidence to replace a very important, and yet unproven, assumption. The legal relevance of this is as follows: although there is no legal burden of proof in an Appropriate Assessment, the default position is that an application should be refused unless there is sufficient information to convince the competent authority that it would not have an adverse effect on the integrity of the protected sites. It is therefore in an applicant's interest to ensure that the competent authority has sufficient information to be able to reach the required level of certainty. As Peter Jackson LJ held in ***R (Mynydd y Gwynt Ltd) v Secretary of State for Business, Energy and Industrial Strategy*** [2018] P.T.S.R. 1274:[17]

> *31. I agree that the use of the expression "burden of proof" in this context is not helpful. The task of the decision-maker is to make an assessment on the basis of all the available information, applying the appropriate legal test. In the present case, there was a default position by virtue of regulation 61(5). But that is not the same thing as a legal burden of proof weighing upon one party to the process. It means no more than that it is in the interests of the applicant, who will self-evidently want the application to succeed, to provide the information necessary to enable a favourable decision to be made. It is clear that the judge did not mislead himself in this respect, because he described the "burden of proof" upon the applicant in this way: "In effect, the burden upon him is to ensure that the competent authority is provided with sufficient information to convince the authority.*"

[17] CD 13.22.

21. The EA submits that the Appellant has failed to provide sufficient information to convince the Secretary of State that HPC without an AFD would not adversely affect the integrity of the protected sites. The Appellant's complaints about the EA and SNCBs being too precautionary should not be allowed to distract from the fundamental problem in this case: there is great uncertainty in the data sets, the Appellant is forced to rely on assumptions in relation to key issues, and all because it has not taken the many opportunities available to carry out monitoring and sampling to resolve the obvious uncertainties. It is quite wrong for the Appellant to portray the EA as having been hyper-cautious in its assessment. The EA has merely refused to assume or wish away the obvious uncertainties that the Appellant has failed to resolve.

22. Thirdly, the project is a novel design and there are no data from similar infrastructure operating in the real world, so predictions are based on theoretical modelling. In and of itself that is not uncommon, but the point is that it particularly compounds the other uncertainties. The data sets give rise to considerable uncertainty, an unproven assumption is relied on about the quantities and life-stages of fish near the HPC intake which is the foundation of the whole QIA process, and yet there is no working, real world, comparator which could be used to give reassurance that the QIA predictions are realistic.

23. Fourthly, the project will have a continuous effect for 60 years in circumstances where there are no adaptive management options to respond to changes in environmental circumstances because continuous water abstraction is required for nuclear safety reasons. It is submitted that this ought to affect the Secretary of State's approach to uncertainty and risk. It is one thing to consent a short term project which can be amended or halted if initial ecological predictions prove to be incorrect, but it is quite another to give the green light to a 60 year impact on 4 protected sites which cannot easily be reduced if predictions based on data deficiency and assumptions prove to be an underestimate.

24. Finally, it should be noted that the EA has used the best scientific methods available in order to try to account for these uncertainties. Dr Edwards explained that the EA's formal uncertainty analysis was a more scientifically robust method of accounting for

the recognized uncertainties than the Appellant's approach of making so-called "*conservative*" assumptions -many of which (as set out below) the EA disagrees are in fact conservative.[18]

25. Dr Edwards explained that the EA had not, contrary to Dr Jennings' suggestion, assumed that an extreme upper value of annual percentage loss to entrapment calculated for one year will be repeated in all other years.[19] Instead, the uncertainty analysis has simply been used to reflect the level of quantifiable uncertainty within the QIA. Together with the qualitative analysis, the uncertainty analysis it informed the overall judgment about whether it was possible to conclude beyond reasonable scientific doubt that there would not be an adverse effect on the integrity of the protected sites.

26. Nevertheless, it is important to appreciate that the uncertainty analysis is still based upon the CIMP data and the assumption that the difference in HPC location does not affect the likely nature and scale of impingement losses. If the CIMP data is not representative of circumstances at the HPC intake then the actual impact will differ from the prediction and may well be outside the range of possible values in the uncertainty analysis. In other words, there is no guarantee that the uncertainty analysis represents the maximum possible impact.

LVSE intake factor

Introduction

27. Before dealing with the areas of dispute, I will explain the position in relation to the LVSE intake factor which also forms part of the QIA.

28. The QIA process begins by estimating the number of fish likely to be impinged at HPB and then scaling that up to account for the much greater volume of water that HPC will abstract. The parties agree that the correct number to scale by is close to 4.[20]

[18] Edwards rebuttal, section 2.1.
[19] Jennings proof, paras 6.64 to 6.81, and Edwards rebuttal, section 2.2.
[20] Statement of Common Ground (CD 6.5) paragraph 3.11.

29. Next, the parties agree it is necessary to apply certain intake design factors to account for the different intake design at HPC. There are two factors: the pelagic cap factor (which represents the benefit of the HPC capped intake that reduces entrapment by vertical currents); and the intake intercept area factor (which accounts for the performance of the low velocity side intake design).

30. The Appellant has agreed the EA's calculation of the pelagic cap factors for the species of concern.[21] In the case of pelagic species (which will be protected by the capped intake from entrapment by vertical currents) the factor is 0.23 (range 0.18-0.28) which has the effect of reducing predicted entrapment to around a quarter of what it otherwise would have been. The EA thereby gives considerable credit for the performance of the capped intake. Indeed, the EA's pelagic cap factor gives a *greater* benefit to the capped intake which again indicates that the EA has not been overly precautionary in its assessment.

The agreed intake intercept area factor of 1.0 is not conservative as the Appellant claims

31. The parties disagreed about the intake intercept area factor. The intake intercept area factor represents the interaction of the HPC intake with the tidal stream relative to the HPB intake i.e. it is a ratio of the cross-section/effective area that each of the intakes presents to the tide.

32. In the absence of agreement, the Appellant proposed a factor of 1.0 i.e. no effect, which it argues is "*conservative*". The EA had proposed a factor of 1.394, but having considered the calculation error identified by the Appellant, and the additional data/information provided, it now accepts that it is appropriate to use a factor of 1.0.[22]

33. The remaining issue is whether the intake intercept area factor of 1.0 is "*conservative*" as the Appellant claims. By claiming that the factor of 1.0 is "*conservative*" what the Appellant means is that the Secretary of State can be certain that the intake intercept area is less than 1.0.

[21] See table 1 at p.8 of the Statement of Common Ground (CD 6.5).
[22] CD 6.6c.

34. The EA contends that the factor of 1.0 has not been proven to be "*conservative*" and that use of a factor of 1.0 should not be regarded as a precautionary assumption.

35. The starting point is that the LVSE intakes proposed for HPC are the first of this kind to be constructed anywhere in the world.[23] Consequently, because of the novel design of the LVSE intakes, there are no empirical data to confirm how the intakes actually perform in the real world. The predicted performance of the intakes therefore relies upon theoretical modelling.

36. The Appellant's argument that a factor of 1.0 is "*conservative*" is based upon Dr O'Donnell's analysis of the geometric area that is presented to the tide.[24] Briefly, Dr O'Donnell argues that there is a '*streamline corridor*' either side of each LVSE head and that the '*geometric area*' extends out 2m from the intake face because that is the '*zone of influence*' of the intake heads. The total '*geometric projected area*' for HPC is 32m² i.e. 2m (assumed zone of influence each intake face) x 2m (height of each intake face) x 2 (sides to each intake head) x 4 (number of intake heads). The effective area of HPB is agreed to be 54.8m² and so using the effective area for HPC of 32m² Dr O'Donnell calculates the ratio of HPB:HPC effective area to be 0.6.

37. The validity of that calculation crucially depends upon the 2m '*zone of influence*' being correct. It is therefore important to be clear where that figure comes from and how and why it was produced. Dr O'Donnell explains that the 2m distance represents an area "*beyond which there is no horizontal draw into the heads*".[25] He further explains that the 2m distance is "*based upon interpretation of the CFD modelling and experimental validation work of the LVSE intake carried out by HR Wallingford, specifically the 2m draw*".[26] In cross-examination he confirmed that the only modelling work he relied on was the 2013 HR Wallingford document,[27] and modelling relating to Sizewell C in SPP 105.[28] It is therefore necessary to scrutinize whether that modelling demonstrates that the LVSE intakes certainly have no effect on fish beyond 2m.

[23] O'Donnell proof, para 5.6.
[24] See CD 6.11d, figure 1.
[25] CD 6.11d, para 8(b).
[26] CD 6.11d, para 10.
[27] CD 1.13.
[28] CD 7.15.

38. The HR Wallingford report was concerned solely with '*Task 1*' that EDF had commissioned i.e. it described the results and conclusions of the physical model investigation carried out to assess flows at the intake heads.[29] Importantly, the report pre-dated the design optioneering for the AFD (which took place from 2014-2017) and so HR Wallingford were clearly proceeding on the basis that an AFD would be installed. Indeed, they made recommendations about the final selection of the system for mounting the AFD.[30] It was not part of HR Wallingford's brief to examine how the LVSE intakes would affect fish, especially not how they would affect fish in the absence of an AFD.

39. In terms of the physical modelling work undertaken by HR Wallingford, it is relevant to note that:

    a. They built a model at a scale of 1:25.3 which meant that the 35.5m real life intake was about 1.4m long in the model.[31] At that scale, a distance of 2m would be 79mm;
    b. They observed "*flow patterns approaching and passing inside the intake head*" and their visual observation was "*aided using injected dye tracker*";[32]
    c. The "*example observed flow patterns*" were illustrated in Figures 10.1-10.8, and Figures 10.1, 10.3 and 10.5 show "*distance to undisturbed flow approximately 2m*";[33] and
    d. They said that "*the typical distance from the intake entrance to the "undisturbed" ambient flow stream was estimated at approximately 2m*".[34]

40. Accordingly, the figure of 2m was an *estimate* (not a measurement), it was based on visual observations of dye movement at a scale of 1:25.3, and it was obtained when carrying out '*Task 1*' which was not concerned with measuring the affected distance for fish from the intake head, or assessing the effect of the LVSE heads minus an AFD.

[29] CD 1.13, p7.
[30] CD 1.13, p52, section 13.
[31] CD 1.13, p16, section 8.1.
[32] CD 1.13, p19, section 8.3. See e.g. photograph B18 on p80.
[33] CD 1.13, pp21, 23 and 25.
[34] CD 1.13 p34, section 10.1.2.

Based on the physical model report, it is impossible to conclude beyond reasonable scientific doubt that the LVSE heads would not have any effect on fish beyond 2m.

41. Section 11 of the HR Wallingford report also compared the results of the physical model to flow distributions and velocity magnitudes predicted by the computational fluid dynamics ("**CFD**") model. That section looked at the inward velocities very close to the entrance opening screens in order to ascertain whether they remained below the 0.3m/s target.[35] Dr O'Donnell relies on figure 11.3,[36] but that does not show the LVSE heads have no effect at all beyond 2m. Instead:

    a. The top image of the figure shows an intake head sliced in half lengthways. The width of the intake in the image is 5m (i.e. half of the full width of 10m);
    b. The tide is moving left to right and the arrows or vectors show the direction and magnitude of the flow;
    c. Where the arrows are horizontal and aligned to the intake heads they are showing an undisturbed flow;
    d. There is no Y-axis to measure distance from the intake heads, but using the 5m width of the intake as a guide, it is clear that the flow is disturbed up to around 5m from the intake face.

42. It is unsurprising that there is no Y-axis to measure distance from the intake heads because HR Wallingford were not assessing the affected distance/zone of influence of the intake heads. Instead, they were focused solely on the inward velocities very close to the entrance opening screens. In cross-examination Dr O'Donnell said that the CFD modelling showed that inward velocities dropped off considerably only a short distance from the intake face, but that does not answer to point. The fact is that the CFD modelling shows the intakes have an effect on flows beyond 2m and yet nobody has ever investigated whether, and if so how, that could affect fish. In those circumstances, it is not possible to conclude beyond reasonable scientific doubt that the zone of influence of the intake heads is no greater than 2m.

[35] See CD 1.13, section 11.1.
[36] Reproduced as his Figure 10 to his proof and again as figure 2 to his note at CD 6.11d.

43. The Sizewell C modelling in SPP 105 confirms that the intake heads *do* have an effect beyond 2m.[37] Figure 2 shows the variation in inward velocity with distance from the LVSE intake surfaces at different tidal current speeds.[38] At all tidal current speeds the intakes are predicted to create an inward velocity at least up to 5m away. Again, it is beside the point simply to say that the inward velocity is predicted to be small because crucially the Appellant has never sought to understand what effect such small inward velocities might have on the fish species that are likely to encounter the intake head (which in many cases will be small themselves).

44. Against that background, it is clear that the Appellant's argument that a factor of 1.0 is "*conservative*" is not based on the best scientific evidence. Instead, it is merely based on a '*zone of influence'* of 2m which is *assumed* to represent the distance beyond which the intakes do not affect fish. Such an assumption is unwarranted given that the modelling shows the intakes create inward velocities up to 5m away and given that nobody has ever carried out any assessment of how small inward velocities affect fish.

45. It should be emphasized that the EA is not merely speculating about risk here. Until this variation application, the Appellant itself was absolutely crystal clear that LVSE intake heads needed to be combined with an AFD in order to be effective. In TR148 (written in 2011 in support of the original permit determination) Cefas said:[39]

> *"because of the usual high water turbidity at Hinkley Point and the consequent absence of visual clues, any mitigating effect of the low-velocity intake is only likely to be realised if it is combined with some form of artificial stimulus (e.g. an acoustic fish deterrent) to induce fish to swim away from the intake structure. Equally however, an acoustic fish deterrent is unlikely to be fully effective on its own if the intake velocity exceeds the swimming capabilities of the fish. For these reasons low-velocity intake and AFD need to be considered as a combined mitigation measure"*

46. In 2015 (i.e. after the 2013 HR Wallingford report) the Appellant still maintained that LVSE heads needed an AFD to be effective:[40]

[37] CD 7.15.
[38] CD 7.15, p17/
[39] CD 7.2, p19, section 3.1.
[40] CD 9.46, p42, section 5.1.9.

> "*The target intake velocity of 0.3m/s was chosen in order to minimise the possibility for fish to be sucked into the intake heads as it is a speed that most fish can escape. However, the use of a low intake velocity is only effective if fish can detect it and consequently swim away from it. Therefore it is generally recommended to use some form of fish deterrent such as an AFD or a Louvre screen*"

47. The need for an artificial stimulus to deter fish from the intake heads is unsurprising given that this part of the Bristol Channel is agreed to have near zero visibility sub-surface due to the heavy sediment load.[41]

48. Now by contrast, in suggesting that the intake intercept area factor is 0.6 (based on an HPC effective area of 32m^2) the Appellant is saying that an LVSE intake without an AFD *will* be effective on its own in reducing entrapment by 40% compared to HPB. Yet since the Appellant made the clear statements quoted above, it has not undertaken any investigation or study to test whether LVSE intakes will be effective without an AFD, nor has it sought to understand how the inward velocities revealed by modelling undertaken for other purposes will actually affect fish. Nor has the Appellant undertaken any work to ascertain the extent to which the LVSE intake heads might actually attract fish in the manner of an artificial reef -which is a relevant risk identified in the scientific literature and raised by Mr Waugh, Mr Colclough and a number of third parties.[42]

49. The Appellant's own documents themselves underscore that there is reasonable scientific doubt and that the Secretary of State cannot be certain that an intake intercept area factor of 1.0 is "*conservative*". There is therefore no proper basis for concluding that using a factor of 1.0 overestimates the predicted impact of HPC.

Equivalent Adult Values (EAVs)

50. Because many fish species produce large numbers of offspring, mortality of larval and juvenile fish will not have the same effect on a population as removing the same number

[41] O'Donnell proof, para 3.5.
[42] CD 9.51 (Turnpenny, 1988), pp 2 & 24; CD 9.4 (EA Cooling Water Options, 2000) p73; and CD 6.141 (SEI 30, Seaby 2020) pp 24, 48-51.

of adults would, due to the fact that many of the larvae and juveniles would never have survived to contribute to the spawning population. Consequently, the parties agree that it is appropriate to express numbers of impinged fish in terms of an equivalent number of adults, in order to contextualise the losses of fish of all ages in terms of the equivalent number of adult fish that they represent.[43] This is the Equivalent Adult Value ("**EAV**").

51. The dispute in relation to EAVs turns on how the EAV factors are used and what they represent as opposed to the technical detail of how they are calculated.

52. There are some important preliminary points. First, as Dr Masters explained, published guidance is not prescriptive about the method by which EAVs should be calculated, there is little peer reviewed scientific literature on the topic, and that the choice of methodology depends on expert judgment.

53. Secondly, each different method may define an 'adult' in different ways, so a hundred equivalent adults calculated by one method is not necessarily the same thing as a hundred equivalent adults calculated by another method.

54. Thirdly, EAVs are a contextualization or a first approximation of impacts. Calculations take place in what Dr Masters described as an "*EAV bubble*" i.e. on an assumption that impingement (number, length and age) and population do not change such that losses in one year do not affect population or recruitment in future years.

The Cefas EAV method

55. In its variation application the Appellant proposed a method which was based on comparing the numbers of fish predicted to be impinged at HPC that would otherwise have survived to become first time spawners, to 2009 adult populations. Importantly, the Cefas method does not consider survival of fish past maturity. Once a fish has become an adult, it is counted as one adult in that year, but its potential to spawn again in future years is not counted. However, the potential number of first time spawners

[43] CD 6.5 Statement of Common Ground, para 4.17.

were compared to estimates of the number/biomass of all adult fish in the spawning population (first time and repeat spawners).

The EA's EAV SPF extension

56. The EA considers that the Cefas method undervalues repeat spawning and so it applies a Spawning Production Foregone ("**SPF**") extension. The purpose of the SPF extension is to predict the full impact of the project i.e. how many mature fish would have been in the spawning population but for the project, taking into account first time spawners as well as fish which survive after first spawning to spawn again in successive years (repeat spawners). After all, it is the full impact of the project that is relevant when undertaking an appropriate assessment, not merely the number of first time spawners missing from the population due to impingement in any given year.

The EAV SPF extension is being used correctly

57. Dr Jennings does not dispute the actual calculation of the EAV SPF extension. In his proof he said the SPF extension is a "*technically appropriate way to project the numbers of fish in year class forward through time*",[44] and in evidence in chief he said he had "*no qualms*" about the way in which the EA has carried out the calculation. Rather, he argues that the "*EAV SPF rates are incorrectly used because they are expressed as a percentage of spawning population size*".[45]

58. Dr Jennings agreed with the description of the EAV SPF Extension given in the EA's opening at paragraph 21-22.[46] The key point is that "*the SPF extension counts the fish that would form part of the population but for the operation of HPC. Since it counts 'what is missing' in any given year, it is correct to compare that figure to an annual SSB (i.e. what 'remains'). Comparison between the two reveals the full impact of HPC*".

[44] Jennings proof, para 5.10.
[45] Jennings rebuttal, para 3.3.
[46] CD 6.24.

59. The Appellant's disagreement with the SPF extension is that the output of the SPF extension calculation cannot reasonably be compared to an annual spawning stock biomass ("**SSB**") for the population. That contention is wrong:

    a. As Dr Masters explained, the *only* difference between the Cefas method and the EAV SPF extension is that the EA finished the calculation and counted all of the fish that would be missing in any given year as a result of HPC. All of the underlying assumptions are the same. The EAV SPF extension merely counts the missing repeat spawners as well as the missing first time spawners;
    b. If the Cefas method reveals an annual loss, so does the EAV SPF extension -the only difference is that it is expressing an annual loss of first time and repeat spawners as opposed to only first time spawners;
    c. It is true that the results of the Cefas method cannot be compared directly to the results of the EAV SPF extension because they define adults differently (Cefas counts first time spawners whereas the EA counts first time and repeat spawners), but the EAV SPF extension is nevertheless expressing an annual loss of first time and repeat spawners;
    d. The EAV SPF extension can validly be compared with the total SSB and with indicative thresholds for annual losses because it expresses the total number of spawners that would be missing in any given year as a result of prior impingement; and
    e. Ultimately what matters for Habitats Regulations Assessment purposes is understanding what the total impact of the project on the fish population is. Only the EAV SPF extension is able to reveal the total or true loss to the spawning population.

60. It is notable that when advising NRW in relation to Tidal Lagoon Swansea Bay, Cefas said that it was helpful to look at more than simply a percentage annual mortality, and additionally to consider the cumulative mortality over each lifestage for a number of years.[47] That reinforces the EA's position that the EAV SPF extension is a valid and

[47] CD 9.118, sections 2 and 4.

more useful form of analysis than a simple percentage of first time spawners lost in any given year.

61. In answer to your question, Dr Jennings said that the dispute about EAVs was one where there was a right and wrong answer as opposed to a difference of reasonable scientific judgements. The EA agrees. The Appellant cannot show that the technically correct EAV SPF calculation is not a valid and useful consideration when carrying out a Habitats Regulations Assessment. It plainly is because it tells the competent authority how many spawning fish would be in the population but for their having been killed by the project under consideration.

The EAV SPF extension does not need to be applied to the 'baseline' as the Appellant claims

62. Dr Masters explained why it would be wrong to apply the SPF extension to the baseline by reference to Figures 6 and 7 in his proof.[48] He demonstrated that the EAV SPF extension should be applied to the *impinged fish* in order to represent all spawners that would have formed part of the spawning population but for the operation of HPC. He also demonstrated that it would be wrong to apply the EAV SPF extension to the *actual population* against which HPC losses are compared. In the worked example in Figure 7 he showed that the actual population would be extinct in year 3, yet if the SPF extension were applied to the baseline it would incorrectly suggest that the impact of HPC was only 66% as opposed to 100%.

The EAV SPF extension correctly omits fishing mortality

63. The Appellant has criticized the omission of fishing mortality from the EAV SPF calculation, and argued that it overvalues older fish which are targeted by the fishing industry.[49] As Dr Masters explained, however, it is right in principle to omit fishing mortality because zero catch advice is a reasonable worst case scenario and because it is

[48] Masters proof, section 6.3.
[49] See e.g. CD 7.8 (SPP 102).

impossible to include a robust figure for fishing mortality which would be applicable over the 60 year duration of the project.[50]

64. When commercial fishing is taking place, there is additional mortality on top of natural mortality. This additional fishing mortality ("**F**") means that fish generally will not live as long and consequently the EAV will be lower than if there is no F.

65. As Dr Masters explained, it is difficult to select a value for F because it varies over time and with geographic area.[51] He illustrated the problems caused by temporal variations in F by reference to the example that Cefas used in SPP102[52] which relied on Sizewell C data relating to seabass impingement.[53] Cefas used the mean value for F over the years for which they had collected impingement data, but as Dr Masters explained the mean value of F was considerably higher than F was from 2018 onwards. Consequently, by using the mean value of F, Cefas would underestimate the power station's current impact. Incidentally, selecting the lowest historic value of F instead of the mean does not provide the answer because there is no guarantee that F will not be lower in the future. In any event, even if high values of F are taken into account, the EAV SPF factor is still more than twice the Appellant's proposed EAV factor.[54]

66. In terms of geographic variation in F, the fishing and mortality rates used by ICES are calculated for the entire stock area and yet fishing effort is not uniform across the whole of this area.[55] The published value of F may not be representative of fishing mortality on the local sub-population that is being impacted by entrapment by HPC.

67. Irrespective of these difficulties in estimating F, assuming that zero fishing mortality may occur over the 60+ year operational life of HPC is a reasonable worst case scenario which should be adopted as a matter of principle given the status of the fish stocks and current fisheries advice.

[50] Masters proof, section 6.4. See also CD 8.9 (TB010, Appendix E).
[51] Masters proof, section 6.5 and 6.6.
[52] CD 7.8.
[53] Masters proof, section 6.5 and figure 8.
[54] Masters proof, para 6.5.3.
[55] Masters proof, para 6.6.1.

68. For example, in relation to Atlantic cod, in 2020 ICES again recommended that "*there should be zero catch in 2021*" in divisions 7.e-k (western English Channel and southern Celtic Seas).[56] Notably, the ICES 2020 Benchmark Workshop on Celtic Sea Stocks considered the overall conclusion of the benchmark assessment to be that "*the stock is at its lowest SSB and that F has been way too high historically*".[57] Moreover, Dr Jennings agreed that the benchmark workshop had advised on a precautionary basis that a new benchmark assessment would be required before they would feel confident departing from zero catch advice:

> "*The new SAM stock assessment model for cod estimates the stock to be in a poor condition, with SSB well below all biomass reference points. This situation is likely to lead to a very low or zero catch advice and is unlikely to change in the near future. Providing non-zero catch advice in the short term based on the suggested forecast procedure of the benchmark might be possible when ICES guidelines are blindly followed but are likely caused by overestimating productivity of the stock. The stock assessment can be considered the best available science (when using a data-rich stock assessment); however, the low stock size, low catches and the corresponding limited availability of data and samples, in combination with the considerable retrospective uncertainty, cast doubt on the appropriateness of the model for providing catch advice different from zero. Should the stock start to recover and exceed biomass limit reference points, effectively leading to non-zero catch advice, the stock assessment model might have to be revisited to ensure this does not lead to the application of a model on autopilot which has been conditioned on the current situation without considering new developments*".[58]

69. Similarly, ICES advice in 2019 for herring in the Irish Sea, Celtic Sea and Southwest of Ireland was that "*there should be zero catch in 2020*".[59]

70. The current status of whiting and European seabass stocks is also such that it is reasonable to assume zero fishing mortality may occur over the sixty year operational life of HPC.[60]

[56] CD 9.13.
[57] CD 9.22, para 2.1.4, p.3.
[58] CD 9.22, p.6.
[59] CD 9.47.
[60] Masters proof paras 6.7.5 to 6.7.6.

71. There is no commercial fishery targeting twaite and allis shad which are also listed in schedule 5 of the Wildlife and Countryside Act 1981 meaning that it is an offence to kill, injure or take them. Again, assuming zero fishing mortality is a reasonable worst case scenario when assessing the predicted entrapment impacts on those species.

Dr Jennings' revised EAV method still fails properly to account for repeat spawning

72. Dr Jennings proof presented a revised EAV method that differed from the original Cefas method in two main respects. First, Dr Jennings changed many of the parameters used in the calculation of the EAV factor.[61] Secondly, Dr Jennings also changed the 'reference year' i.e. the year's population against which the HPC predicted impingement (expressed as equivalent adults) is compared to in order to give an impact value. Instead of comparing all impacts to the population in 2009, Dr Jennings has chosen a different reference year for each species. This has led to the predicted impacts changing because e.g. the mean weight of an adult fish varies from year to year as does the number/biomass of adult fish in the spawning population ("SSB"). The choice of reference year significantly affects the predicted impact and in evidence in chief Dr Masters explained that important questions about Dr Jennings' selection of reference year remain unanswered.

73. Despite these changes, the fundamental problem still remains because Dr Jennings' approach still only counts first time spawners and not all the fish that will be missing from the population as a result of prior impingement. Dr Masters explained that it is still necessary to apply the EAV SPF extension to Dr Jennings' new EAV factors, and that this would result in EAV factor values approximately 2.6 times higher for Atlantic cod, 1.6 times higher for whiting, 4.4 times higher for European seabass, 4.9 times higher for Atlantic herring and 3.6 times higher for twaite shad.[62]

[61] Dr Masters explained that he would not necessarily disagree with the changes, but he had not had sufficient time to review all of the changes (some of which were updates following revisions made by ICES and some of which were changes in response to TB010, CD 8.9).

[62] Consequently, the EAV factors in Table B of CD 6.26 (ID12) are not directly comparable. The Cefas column shows Dr Jennings' new EAV factors, whereas the EA column shows the EAV SPF extension of the Cefas application EAV factors. To compare like with like, Dr Jennings' EAV factors would need to be extended using the EAV SPF extension.

EAV conclusions

74. The Appellant's EAV method does not show the true impact of HPC because it only considers some of the fish that would have been missing from the population in any given year (the first time spawners). Accordingly, the EA's EAV SPF extension ought to be used to predict the real/full impact of HPC.

Shads

Designations and conservation objectives

75. The following designated sites are relevant in relation to shad:
    a. Severn Estuary SAC: twaite shad is an Annex II qualifying feature and also part of the notable estuarine assemblage relevant to the "*Estuaries*" habitat qualifying feature)
    b. River Usk SAC: twaite shad is an Annex II qualifying feature
    c. River Wye SAC: twaite shad and allis shad are Annex II qualifying features
    d. Severn Estuary Ramsar: twaite shad and allis shad are covered by Criterion 4 and Criterion 8.

76. The conservation objectives all require that the shad population be maintained or restored. To quote just one, the conservation objective for twaite shad and for allis shad for the River Wye SAC is to:[63]

> "*ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring:*
> …
> *the populations of qualifying species"*

77. The standard data forms for the SACs each recognize that the SACs are "*considered to be one of the best areas in the United Kingdom*" for twaite shad.[64]

[63] CD 12.14.
[64] CD 12.31, p5 (River Usk SAC), CD 12.33, p5 (River Wye SAC), and CD 12.30, p5 (Severn Estuary SAC).

78. Now that the UK has left the EU, UK SACs and Ramsar sites form part of the National Site Network of sites of National Importance rather than the EU's Natura 2000 network. Within the National Site Network there are six SACs designated due to the presence of twaite shad, including the Wye, Usk and Severn. Accordingly, the three SACs relevant to this inquiry for twaite shad constitute half of the twaite shad sites within the National Site Network. Additionally, as Mr Crundwell explained, those three SACs host three out of the four twaite shad spawning populations in the UK. This is relevant when approaching the risks and uncertainties in this case because what is at stake is the integrity of a substantial part of the National Site Network relevant to twaite shad.

Conservation status

79. The latest condition assessment for the Severn Estuary SAC shows that the shad feature is in unfavourable condition and that NRW has "*high confidence*" in that assessment.[65]

Population of twaite shad

80. The Appellant's variation application used the population estimate for shad taken from a Severn Tidal Power report produced by APEM in 2010.[66] Mr Crundwell's evidence explains how the EA replaced many of the assumptions in that 2010 report with publicly available empirical data that has since resulted from the Unlocking the Severn Project.[67] The Appellant's theoretical modelled population was almost double (166,000) that of the EA's improved model (86,696).[68] The Appellant now agrees that the EA's improved model should be used to provide estimates of twaite shad population size for the purposes of this inquiry.[69]

Population of allis shad

[65] CD 12.28, p27, para 3.8.
[66] CD 9.108.
[67] Crundwell proof, sections 5.10 to 5.11.
[68] Crundwell proof, para 5.11.2.
[69] CD 6.5 Statement of Common Ground, para 4.28.2.

81. In relation to allis shad, a key point of difference between the parties is whether the Secretary of State should assume on a precautionary basis that there is a spawning population capable of being affected by HPC.

82. Dr Jennings argues that:[70]

> "*in the absence of evidence for ongoing spawning in the Rivers Severn, Wye or Usk, the few allis shad recorded in the Severn Estuary are therefore expected to be stray fish rather than part of a self-sustaining Severn, Wye or Usk population*"

83. He agreed in cross-examination that he had approached the question by asking if there is "*positive evidence*" of a spawning population of allis shad, as opposed to asking whether he could be certain that there was not a spawning population. The EA submits that is the wrong approach to take when conducting a habitats regulation assessment. Where, as here, allis shad are a designated Annex II qualifying feature of SACs affected by a project, the precautionary principle requires the competent authority to assume that a spawning population persists unless it has been proven beyond all reasonable scientific doubt that there is no spawning population.

84. Mr Crundwell explained that he considered it probable that allis shad do persist in the River Wye and Severn:[71]

    a. Allis shad are a qualifying feature of the River Wye SAC because at the time of designation there was a presumed spawning population. Furthermore, the designation remains in place;
    b. Sub-adult allis shad do roam at sea, but it is unlikely that shad from distant populations would migrate so far upstream into the Severn Estuary which is effectively a dead end to migration;
    c. There is evidence of allis shad of a breeding size, at the correct time of the year and in breeding condition captured from Bristol Channel commercial salmon fisheries;
    d. Allis shad genetics persist in the River Wye and Severn shad runs;

[70] Jennings proof, 11.113 (Appendix E, p121).
[71] Crundwell proof, section 5.13 and Crundwell rebuttal, section 2.2.

e. Anglers, commercial netsmen and photographs collected as part of the Unlocking the Severn Project report that very large shad are still present -far in excess of the normal size of the twaite shad that are observed;
f. eDNA analysis of the River Severn shows that a small proportion of shad still penetrate further upstream than the barriers to migration at Worcester which stop twaite shad migration. These are more likely to be large allis shad which have improved swimming speeds and capabilities and can penetrate the catchment further than the twaite shad;
g. Historically the River Severn was a renowned allis shad fishery and it is perfectly possible that a residual population persists.

85. In evidence in chief, Mr Crundwell explained that there is no allis shad life cycle model, or independent run estimate, and so in order to estimate the Severn Estuary allis shad population the EA used the best genetic evidence available and concluded that as a precautionary estimate 1% of the total river Wye shad run could be allis shad, and 3% of the Severn run could be. He explained that there was uncertainty around those figures, but that was the best estimate using the available scientific techniques and data.

There is a reasonable scientific basis for concluding that more adult shad are likely to be present near the HPC intake compared to the HPB intake

86. The parties' quantitative impact assessment predictions are based on the assumption that the proportion of adult shad near the HPC intake will be the same as the proportion near the HPB intake. Both parties have questioned that assumption, but whereas the Appellant speculates that fewer adults will be present near the HPC intake, the EA has provided evidence that amounts to a reasonable scientific basis for concluding that more adult shad are likely to be present near the HPC intake. A greater number of adult fish may mean that the impact of HPC is underestimated as the EAV currently being used is based on HPB impingement.

87. The Appellant's basis for questioning the assumption is Dr Jennings' hypothesis that "*owing to the location of the main tidal flows, diadromous fish associated with the Wye, Usk and Severn and using selective tidal stream transport are highly unlikely to be swimming close*

to the HPC intake".[72] But in cross-examination Dr Jennings agreed that he was not able to point to any evidence to demonstrate that was in fact the case because the Appellant has never undertaken any empirical studies to test whether or not the assumption holds true.

88. By contrast, Mr Crundwell was able to point to significant new information concerning twaite shad behaviour which has been obtained from the Unlocking the Severn Project using the best scientific methods available.[73] In his evidence in chief, Mr Crundwell explained that the new shad science covers the following areas relevant to this inquiry:

    a. It provides an independent run estimate of the shad population;
    b. Its provides new evidence about the freshwater distribution of shad and their behaviour;
    c. It provides new information about the freshwater survival of shad each spawning year;
    d. It provides the first evidence of shad movements in the Severn Estuary and the sea via acoustic tracking data;
    e. It provides new evidence about spawning, sea survival between years and site fidelity; and
    f. It provides evidence of hybridization rates, and eDNA distribution.

89. Although the new evidence constitutes the early results of a project that is due to run until 2025, Mr Crundwell explained that the acoustic tagging results of over 200 fish indicate that:
    a. Shad enter freshwater for only about 30 days;
    b. Shad are present in the Severn Estuary during most months of the year, except December, January and February;
    c. Geographically, they appear to use the whole of the Severn Estuary -not just the main channel, but also the bays. Indeed, they use both the English and Welsh coastlines and make migrations from open water to bays frequently. Some shad

[72] Jennings proof, para 4.75.
[73] See Crundwell proof, section 5.7 for a summary of the new evidence and scientific techniques used.

appear to be semi-resident in bays for many weeks or months and migrate in and out, sometimes daily;

d. Migration to spawning rivers is not continuous, but instead it is controlled by water temperature and tide;
e. Shad using selective tidal transport do not move quickly through the estuary sticking to the main channel, but instead make many movements throughout the estuary for feeding, migration and shelter. In fact, migration to spawning rivers is not accomplished on just a few tides, but instead it takes place over many weeks; and
f. Survival at sea between years is high (around 60%) and adult shad can return 5 or more times to spawn.

90. Mr Crundwell emphasized how significant this new evidence is. Prior to the use of acoustic tagging of shad through the Unlocking the Severn Project, it had been impossible to track movements of adult shad in coastal waters. Instead, it had been necessary to rely on bycatch data to give an indication of the temporal and spatial distribution of shad. The new evidence represents a massive leap forward in our understanding of shad behaviour.

91. There is nothing at all in the new data to support the Appellant's speculation that fewer shad are likely to be present near the HPC intake. On the contrary, the work of Davies et al,[74] provides a reasonable scientific basis for believing that shad are more likely to be found near the HPC intake because the results of the tagging study "*suggest year round use of estuarine and nearshore habitats by at least a subset of the twaite shad population during the marine phase*".[75]

92. The Appellant sought to cast doubt on the value of the three detections of shad in Bridgwater Bay, but those results are in keeping with the results demonstrating the use that shad make of Swansea Bay.[76] The Swansea Bay results show that shad move around

[74] CD 9.36.
[75] CD 9.36, abstract point 3.
[76] Crundwell proof, appendix 1, p45-46.

the bay and can visit multiple times. There is no good reason why shad would not use other bays, such as Bridgwater Bay, in a similar manner.

93. The Appellant also sought to suggest that one of the shad detected in Bridgwater Bay might have died or shed its tag. Dr Jennings agreed in cross-examination that this was speculation. An acoustic tag has a range of approximately 200m and it is highly unlikely that a dead fish would remain within range to be detected for 3 months by a single receiver in an estuary which has a very large tidal range. It is far more likely that a dead fish or shad tag would be swept out of range or buried in the high sediment load, and thus cease to be detected. Whatever the fate of this single shad, the wider results support Mr Crundwell's view that shad are likely to be using bays like Bridgwater Bay for most of the year and that they make multiple movements around the full extent of the bays for purposes such as feeding and shelter.

94. There are significant differences between the location of the HPB and HPC intakes. HPB is near-shore, whereas HPC is 3km out into the Severn Estuary. The CIMP data shows that it is predominantly juvenile shad that are entrapped at HPB which Mr Crundwell explained was to be expected because small fish are more likely to use near-shore habitats because they warm up quicker, have abundant food, and there is less tidal energy meaning the smaller fish with poor swimming speeds can remain there feeding for longer. Additionally, the tidal cycle is likely to push these smaller fish to the margins. By contrast the initial tracking results suggest that adult shad are likely to be in the vicinity of the HPC intake for prolonged periods.

95. Accordingly, there is a reasonable scientific basis for concluding that shad may be more likely to be impinged at HPC than at HPB. If that is the case then the predicted impacts are likely to underestimate the true impact of HPC. The Appellant is wrong to contend that the EA has adopted too many precautionary layers in its assessment. The EA's precautionary assumptions are not only warranted when considered in isolation, but also warranted when viewed collectively because there is such considerable uncertainty about this central assumption of the whole quantitative impact assessment.

96. Finally, it is important to note that shad have exceptional hearing and the AFD was the most important mitigation for shad in the whole intake system. The Appellant's own predictions of the efficacy of an AFD in its DCO application indicated that an AFD would be likely to deter 88% of shad from entering the intakes.[77] Removal of the AFD puts the most valuable component of the shad stock i.e. adult shad, at far greater risk of entrapment (and if they are entrapped, FRR is agreed to result in 100% mortality for shad).[78]

It is a reasonable worst case scenario to assess predicted impacts of HPC against each river stock separately

97. The EA has assessed the impacts of HPC on each of the rivers designated for shad individually in line with the advice received from Natural Resources Wales.[79] Mr Crundwell acknowledged that it is unlikely that HPC would have an impact only on shad from a single stock. Nevertheless, he explained that there is no reasonable alternative in the absence of any evidence to show the proportions in which the different stocks would be impacted. The reason there is no evidence is because no genetic evaluation was carried out as part of the RIMP or CIMP to attribute impingement losses to a particular river and because the Appellant has not carried out any other assessment work capable of enabling losses to be apportioned between the rivers.

98. Even if there were a genetic study of the juveniles entrapped at HPB, it is likely that the proportions of the different stocks entrapped each year would vary based on the prevailing environmental conditions. Consequently, a long term study would be required to make a reliable estimate of the proportion of each stock likely to be entrapped. In the absence of such data, the EA's decision to follow the advice of the SNCBs is the only logical and precautionary option. Anything else would be guess work with no reasonable scientific basis. Tellingly, the Appellant criticizes the EA's approach but does not suggest a workable alternative.

[77] See CD 1.11, table 19, p66.
[78] See e.g. CD 6.26 (ID12), table A.
[79] Masters proof (salmon), Appendix 4, p.53.

It is not possible to conclude that the project will not adversely affect the integrity of the protected sites

99. The starting point is that the population of shad in the Severn Estuary and contributing rivers is classed as "*unfavourable*" and the conservation objectives require the population to be restored. The EA submits that the long term impact of HPC on the shad population would undermine that conservation objective by hindering restoration and thus adversely affect the integrity of the designated sites.

100. The EA's quantitative analysis predicts the following level of impact on the shad population:

Severn Estuary SAC & Ramsar (twaite shad)	0.1%
River Wye SAC (twaite shad)	0.2%
River Usk SAC (twaite shad)	0.4%
Severn Estuary SAC & Ramsar (allis shad)	0.6%
River Wye SAC (allis shad)	0.4%

101. Of course, those figures are based on the assumption that similar numbers of adult shad will be entrapped at HPC compared to HPB. If, as Mr Crundwell considers likely, more adult shad will be entrapped at HPC, then the EAV factor may be higher and the impacts may be greater.

102. Although the modelled impacts appear to be small, the crucial point is that even this level of continuous downward pressure for 60 years will undermine the conservation objectives by hindering, or preventing, restoration of the shad population to a favourable conservation status. Mr Crundwell explained this by reference to the model of Aprahamian.[80] The blue line (showing a 0.1% increase in mortality) demonstrates that the long term effect of the predicted impacts will be to cause a slight decline in the shad population. It is no answer to say that the decline will be small. The

[80] CD 9.115, figure 5A.

point is that it unquestionably is a decline in circumstances where the conservation objective requires the restoration of the shad population. An additional long term pressure that has the opposite effect to that required by the conservation objectives *does* undermine the conservation objectives and it necessarily constitutes an adverse effect on the integrity of the designated sites.

103. The EA's reasoning is neatly encapsulated in the following extract from its Appropriate Assessment:[81]

> "*This pressure might be acceptable if the stock status was sufficient to allow a surplus to be cropped but for a species like the twaite shad that is already in "unfavourable" condition and well below historic levels any level of additional cropping is going to, over the long term, supress the population further and prevent the recovery of the stock therefore preventing a favourable condition assessment to be made.*"

104. In an attempt to escape the logic of this analysis, the Appellant sought to rely upon other initiatives being undertaken with respect to shad.[82] The suggestion appeared to be that artificial barriers to migration were the real obstacle to restoring the shad population and that the impact of HPC was slight in comparison.

105. The Appellant's argument fails, however, on the facts because it is clear that the Rivers Usk and Wye are not currently affected by artificial barriers to migration, and the Unlocking the Severn Project restoration works are directed only at the River Severn. This is confirmed by the latest NRW condition assessment which notes that the River Wye has "*no significant artificial barriers to migration*" and that the only limitations in the River Usk are the footings of Crickhowell Bridge and (in low flows) the footings of Llanfoist Bridge.[83] Indeed, the designation for the River Wye recognizes the shad migrate "*over 100km upstream*" through "*an unobstructed main channel*".[84]

[81] CD 4.1, p53.
[82] In relation to other initiatives, NRW's advice was that "outcomes of [Unlocking the Severn Project] are yet unrealised and therefore irrelevant to conclusions of the current 'alone' assessment, even as context": see Masters proof (salmon) p46.
[83] CD 12.28, p28.
[84] CD 12.32, p1.

106. It is only in relation to the River Severn that "*the situation could be significantly altered by the restoration project on the River Severn*".[85] Nevertheless in cross-examination Dr Jennings suggested that improvements to the River Severn would reduce impacts on the other designations because the impact on the other rivers is modelled using the River Severn run estimate. But that argument confuses the modelling exercise with what would happen in the real world. Modelling the impact on the Rivers Wye and Usk against an increased River Severn run estimate in the future would give the appearance of a benefit to the populations of the Wye and the Usk (the impact would appear lower because the population that impingement numbers were compared to would be larger). Yet, there is no evidence that restoration works to the River Severn would actually result in any benefits for the shad populations in the Rivers Wye and Usk. The modelling would show an apparent benefit that is not realized in the real world.

107. Accordingly, the impact of HPC in relation to the River Wye and the River Usk SACs cannot be justified by reference to restoration works relating to the River Severn. There are no secured restoration initiatives relating to the Wye and the Usk that can be relied upon to show that the conservation objectives can be met notwithstanding the additional downward pressure on the shad population caused by HPC.

Atlantic salmon

Designations and conservation objectives

108. The following designated sites are relevant in relation to Atlantic salmon:

a. Severn Estuary SAC: Atlantic salmon is part of the notable estuarine assemblage relevant to the Annex I qualifying habitat "*H1130: Estuaries*"
b. River Usk SAC: Atlantic salmon is an Annex II qualifying feature
c. River Wye SAC: Atlantic salmon is an Annex II qualifying feature
d. Severn Estuary Ramsar: Atlantic salmon is covered by Criterion 4 and Criterion 8.

[85] CD 12.28, p28.

109. The conservation objectives are set out in Table 1 of Dr Masters' proof.[86] The essential points are that: (i) the conservation objectives all require that the population be maintained or increased and sustainable in the long term; and (ii) because the populations are currently in unfavourable condition the objective is to restore them, not merely to prevent further harm.

Conservation status

110. The Minister of Fisheries, George Eustice, has recently said that across its range, Atlantic salmon populations are in a "*serious, perilous state*".[87] Numbers are also described as being "*at crisis levels*" by the North Atlantic Salmon Conservation Organisation.[88] Dr Masters explained that the latest stock published assessments for the principal salmon river tributaries of the Severn Estuary show that the River Severn, River Wye and River Usk stocks are all 'probably at risk'.[89] Egg deposition in 2019 was 51% of the river Severn's conservation limit, 31% of the River Wye's conservation limit, and 70% of the River Usk's conservation limit -putting the Severn and the Wye close to being "*at risk*".[90] The 2020 figures are still provisional and not published, but Dr Masters said the three rivers are expected at least still to be "*probably at risk*". Moreover, it is agreed that the rivers are projected to be "*probably at risk*" in 2024.[91]

111. It is important to note the significance of the current unfavourable population status of Atlantic salmon. Dr Masters agreed with the evidence of Mr Ian Russell of Cefas given on behalf of NRW at the Wales Rod and Line (Salmon and Sea Trout) Byelaws 2017 inquiry to the effect that "*[i]t's important to note that any additions to the spawning stock are particularly valuable when stocks are at low levels. Even relatively small numbers of fish are crucial to recover stocks in as short a time as possible*".[92] Thus Cefas has previously accepted that the unfavourable population status of Atlantic salmon provides a powerful justification for preventing even relatively small levels of additional mortality.

[86] Masters proof (salmon), p8, table 1.
[87] Masters proof (salmon), para 5.1.1.
[88] Ibid.
[89] Masters proof (salmon), section 5.2. See also CD 6.5 Statement of Common Ground, para 4.29.1.
[90] Masters proof (salmon), para 5.2.7.
[91] CD 6.5 Statement of Common Ground, para 4.29.1.
[92] Masters proof (salmon), para 7.1.6.

Population of Atlantic salmon

112. The population sizes against which Atlantic salmon losses should be compared for the appropriate assessment for the River Severn, River Wye and River Usk SACs are agreed.[93] Dr Masters explained that the agreed figures are based on the mean run size between 1997 and 2017 i.e. the period for which we have run size estimates for the principal salmon rivers and impingement records from the RIMP data set. Importantly, he explained that the agreed figures are *higher* than those used by the Appellant in its variation application.[94] The fact that the EA has used the best scientific methods to arrive at a higher population estimate than the Appellant substantially undermines the Appellant's complaint that the EA has generally been too precautionary in its assessment. Instead, it indicates that the EA has consistently made its judgments on the best available evidence without any predetermined view as to the outcome.

There is significant uncertainty in relation to the predicted impact of HPC on Atlantic salmon because of the data deficiency

113. Dr Masters explained that there is significant uncertainty in the predicted impact of HPC on Atlantic salmon because of the data deficiency. It is therefore important to look at what the available data shows and why it is difficult to make any reliable predictions of the impact of HPC on Atlantic salmon.

114. The Appellant proposed a method for predicting salmon impingement in TR456 that was based on using the RIMP data.[95] Dr Masters explained that there were three main flaws in that approach:

a. The Appellant's analysis totally discounted any juvenile salmon and only considered kelts (the 2002 returning adult having been mistakenly identified as a kelt in TR456);

[93] CD 6.5 Statement of Common Ground, paras 4.29.5 to 4.29.8.
[94] CD 1.11, p75. The Appellant's mean then was 15,883 compared to the agreed mean now of 17,616.
[95] CD 1.11, p76. On which see Masters proof (salmon), section 6.3.

b. The analysis was based on an annual average density which took no account of the possibility that salmon may have been impinged outside the 0.41% of HPB flows that were monitored by the RIMP; and
c. The analysis assumed that kelts will only be caught on an ebb tide at HPC because they were caught on ebb tides in the RIMP (which of course only sampled ebb tides).

115. The EA instead used a similar method to that used to analyse the CIMP data for other species. It used 21 years of RIMP data for which it also had population data available.[96] The result of this analysis is a prediction of 12 equivalent adults impinged each year by HPC.[97]

116. As with shad, the EA has followed the advice of the SNCBs[98] and on a precautionary basis assessed HPC losses against each SAC population individually because it is impossible to predict what proportion of impinged salmon will originate from which SAC. In recognition of the precaution involved in that assumption, the EA has judged it would be inappropriate additionally to use uncertainty analysis when assessing the impact on Atlantic salmon from the river SACs.

117. Dr Jennings proof contains a new assessment based on two smolts that were caught in the CIMP outside the time period that Cefas used for the analysis in TR456.[99] He raises the two smolts impinged at HPB to an impingement prediction for HPC of 16 smolts per annum which he then equates to 1.6 returning adults per annum. As Dr Masters explained, this new analysis still ignores the evidence of the RIMP which showed that kelts and a returning adult have previously been impinged at HPB (despite the infrequent sampling). He also noted that Dr Jennings' estimate is a minimum because it is not clear that all four pumps were operating at full capacity when the smolts were caught.

[96] At this point the EA had not seen records of salmon being caught in the CIMP outside the sampling period used by the Appellant, hence why the EA used the RIMP data.
[97] CD 6.26 (ID 12), table C.
[98] Masters proof (salmon), Appendix 4.
[99] Jennings proof, paras 4.161 to 4.163.

118. The fundamental difficulty in relation to predicting the impact of HPC on Atlantic salmon though is the data deficiency discussed above. In short, the RIMP and the CIMP were not designed to provide a robust estimate of salmon impingement and their low sampling frequency means that it is unsafe to draw firm conclusions about the level of salmon impingement at HPB. As NE said, the data deficiency arising from the fact that "*RIMP & CIMP methods are ineffective in detecting smolt impingement (seasonal, nocturnal)*" provides "*a strong justification to take a precautionary approach*".[100]

119. Against that background of data deficiency, it would be wrong to fall into the trap of accepting the Appellant's argument that impingement of salmon at HPC will be a rare event because the RIMP data shows few salmon were impinged at HPB. As Dr Masters explained, even the very limited daytime RIMP sampling managed to record impingement of every possible life stage of salmon. That does not show that salmon impingement must be rare, but instead it is a salutary warning that the considerable data deficiency could be masking a greater impact on salmon. Put simply, low numbers of recorded impinged salmon during infrequent, non-targeted monitoring, does not necessarily mean that low numbers of salmon are actually impinged at HPB.

120. For completeness it should be noted that the doubts raised by Dr Jennings about the status of some of the salmon recorded in the data do not substantially affect the predicted impacts. Dr Jennings argues that fish recorded as parr or smolts in TR456,[101] appear to have been caught in the autumn and so are likely to have been autumn wash-outs that would have died anyway. Dr Masters agreed that may be the case, but he pointed out that it has only a slight effect on the EA's RIMP-based prediction due to the effect of the recorded returning adult on the EAV calculation.

There is no reasonable scientific basis for concluding that fewer salmon are likely to be present near the HPC intake compared to the HPB intake

[100] Masters proof (salmon), Appendix 2.
[101] CD 1.11, p41, table 6.

121. Just as with shad, there is a disagreement about whether it is right to assume that impingement data at HPB accurately reflects the fish that are likely to be encountered near the intake of HPC.

122. Dr Jennings argues that salmon are less likely to be impinged at HPC because the intake is in deeper water where pelagic smolts are less likely to encounter them.[102] But as Dr Masters pointed out, the HPC intake is also 3km further offshore and closer to the main channel which is likely to increase the likelihood of salmon encountering the HPC intake. Furthermore, the EA's calculation of predicted impingement for Atlantic salmon already includes the effect of the pelagic cap (with an agreed factor of 0.23).

123. Salmon using selective tidal transport will not just use the main channel. They are likely to use the whole estuary. Dr Jennings agreed that there were putcher ranks previously on the River Severn which fished for salmon in the intertidal zone of the estuary. The fact that people fished for salmon in the intertidal zone itself suggests that salmon are commonly encountered on the margins of the estuary away from the main channel.

124. In the absence of any survey or monitoring directed at answering this particular question, it really is speculation for the Appellant to suggest that HPC will be likely to impinge fewer salmon than HPB.

There is no reasonable scientific basis for assuming FRR mortality of less than 100%

125. Dr Jennings' evidence suggested that, based on experiments conducted at Oldbury Power Station in 1970,[103] "*it would be a reasonable assumption that 50% of healthy salmon smolts would survive impingement at HPC*".[104] In cross-examination he agreed, however, that the Secretary of State should make his assessment on the basis of 100% salmon smolt mortality in the FRR.

[102] Jennings proof, para 4.151.
[103] CD 9.53.
[104] Jennings proof, para 3.12.

126. There is no reliable basis for departing from an FRR mortality rate of 100% and, in any event, the point is not a significant one in the overall assessment of the impact on Atlantic salmon:

a. As Dr Masters explains in his rebuttal, the Oldbury study does not explain how long smolts were held for after impingement and it is questionable whether delayed mortality was properly accounted for;[105]
b. There are significant differences between Oldbury and HPC, including the fact that at HPC the intake tunnels are 33m below the bed of the channel giving rise to pressure change/barotrauma and the smolts will be transported for 3km through the intake tunnels before going through the FRR; and
c. In any event, whatever the FRR mortality of salmon smolts, the FRR mortality of adult salmon and salmon kelts will be 100% and so the overall prediction will not be significantly affected.

The Appellant's comparison with salmon mortality related to catch and release fishing merely underscores the absence of adaptive management available in relation to HPC

127. The Appellant sought to suggest that some level of salmon mortality should be regarded as acceptable because catch and release fishing remains possible in the designated rivers and that has an incidental mortality risk associated with it. But as Dr Masters explained, comparison with fishing mortality merely underscores the particular risks associated with the 60 year HPC project:

a. All intentional killing of salmon is prohibited on the Rivers Usk and Wye;
b. Rod licences are not sold for particular rivers and there is no Habitat Regulations Assessment for the issuing of rod licences. Instead, regulatory action takes the form of byelaws which have to be proportionate i.e. the restrictions imposed must be no more than necessary to achieve the objective;
c. The evidence shows that regulatory controls have gradually been imposed on salmon fishing over the last fifty years with the result that there has been a significant fall in the number of licences and fishing days available;[106]

[105] Masters rebuttal, para 6.51.
[106] See e.g. CD 9.50, p10 and p16 Table 6, and p19 Figures 2 & 3.

d. Such adaptive management to protect salmon is not available in respect of HPC because once HPC is commissioned it will be a continuous impingement pressure for six decades.

It is not possible to conclude that the project will not adversely affect the integrity of the protected sites

128. The crucial starting point is that the populations of Atlantic salmon in the principal salmon rivers are "*probably at risk*" and the conservation objectives require their restoration. As with shad, the EA submits that the long term impact of HPC on the Atlantic salmon population would undermine those conservation objectives by hindering restoration and thus adversely affect the integrity of the designated sites.

129. The EA's quantitative analysis predicts the following level of impact on the Atlantic salmon population:

Severn Estuary SAC & Ramsar	0.07%
River Wye SAC	0.2%
River Usk SAC	0.2%

130. Again, those numbers appear small at first blush, but it is important to appreciate the high level of unquantifiable uncertainty surrounding the modelled impacts due to the data deficiency. RIMP monitoring of 0.41% of HBP's flows, on ebb tides only, in daylight only, still managed to detect the impingement of every possible life stage of Atlantic salmon. There is a very real prospect that more representative sampling would show HPB to be having a greater effect on Atlantic salmon which would in turn lead to a greater predicted impact for HPC.

131. This is not a case where one party is merely speculating and pointing to imaginary or hypothetical risks. The data deficiency is plain and obvious. It is recognized by the SNCBs and it goes directly to the heart of the QIA process. If the impact of HPB is not accurately revealed by the 0.41% of flows sampled by the RIMP

then when HPB impacts are scaled up to predict HPC losses the underestimate will be magnified and the resulting prediction for HPC could be wildly out.

132. The only reason we are in the position of having to work with such a major data deficiency is that the Appellant has not undertaken any further monitoring or assessment, despite having the considerable resources and expertise of Cefas available to it since before its DCO application nearly a decade ago.

133. Given the '*probably at risk*' status of the salmon stocks, the considerable uncertainty caused by the data deficiency, and the long-term nature of the project Dr Masters was correct to say he could not be certain that HPC would not undermine the conservation objectives for the designated sites by hindering restoration of the salmon population.

The Marine Assemblage

Designations and conservation objectives

134. There are two preliminary legal issues in relation to the marine assemblage. First, the Appellant argues that the 'Notable estuarine assemblage' is not protected by the Severn Estuary SAC designation. Secondly, the Appellant argues that Ramsar criterion 8 protects physical habitat and not the marine assemblage fish themselves. The EA submits that the Appellant is incorrect and that the Appropriate Assessment is required to consider the impact of the project on the marine fish assemblage.

135. In terms of the SAC, the EA's submissions were set out in its opening legal submissions.[107] In short, the SAC was designated for, among other things, the qualifying Annex I habitat "*H1130: Estuaries*". The conservation objectives for that qualifying features including maintaining or restoring "*the structure and function (including typical species) of qualifying habitats*". The marine assemblage (including Atlantic cod, European seabass, whiting and Atlantic herring) are typical species of the qualifying habitat and so the conservation objective for the qualifying habitat requires that the structure and function of those typical species be maintained.

[107] CD 6.24, para 6 to 14.

136. There is nothing surprising or unusual about that analysis. It is supported by both NE and NRW.[108] Furthermore, it reflects the way in which the Secretary of State conducted his Habitats Regulations Assessment when granting the DCO.[109] Indeed, the Appellant's own shadow Habitats Regulations Assessment to support this variation application also considered effects on the marine assemblage and whether they would undermine the conservation objectives for the "*Estuaries*" qualifying feature of the SAC.[110] Accordingly, it is submitted that it is legally correct to include the marine assemblage in the appropriate assessment and to ask whether HPC could affect the structure and function of the typical species so as to undermine the conservation objective for the "*Estuaries*" qualifying feature and thereby give rise to an adverse effect on the integrity of the site.

137. In terms of Ramsar criterion 8, the Appellant's new argument is that this criterion protects physical habitat as opposed to fish. Both NE and NRW have written to oppose that argument,[111] and the EA submits that the Appellant is incorrect.

138. Read fairly and as a whole, it is clear that Ramsar criterion 8 covers the functions that fish perform within wetland sites and not the physical habitat of the wetland sites themselves. As NRW has observed "*the guidelines for Ramsar Criterion 8 do not concern themselves with the physical habitat, rather they relate to the biological functions which fish populations within or outside the wetland site rely upon to complete their life cycles*".

139. The fish performing the specific biological functions (i.e. feeding, spawning, juvenile residency and growth and migration) are an essential part of the wetland's qualifying interest. As NE explains *"[t]his is not solely a physical habitat-specific criterion, but a criterion that relates to a wetland site that performs specific functions for fish e.g. feeding, spawning, migration etc., of which the fish themselves are manifestly a critical element*".

[108] CD 14.8.
[109] CD 5.8, para 6.147.
[110] CD 1.9, section 6.4.
[111] CD 14.9 and CD 14.10.

140. In the case of the Severn Estuary Ramsar site, the site is designated under Ramsar criterion 8 for "*the fish of the whole estuarine and river system*" because those fish perform functions that the wetland site is important for. Alteration of the structure of the fish populations could affect the functions that the fish perform within the wetland site and consequently adversely affect the importance of the wetland site for those functions. For these reasons, it is right to consider the fish assemblage in the Appropriate Assessment in relation to the Ramsar site (as the Secretary of State did when granting the DCO).

141. Finally, in relation Ramsar sites, it is agreed that national policy affords them the same protection as SACs.[112] Of course Ramsar sites do not have formal conservation objectives, so it is necessary to derive conservation objectives in order to apply the integrity test. The EA submits that the Secretary of State adopted the correct approach when granting the DCO by using the conservation objectives of the Severn Estuary SAC because the designations are "*contiguous and the qualifying features for the SAC broadly align with the Ramsar*".[113]

Conservation status

142. The conservation status of the four marine assemblage species is agreed:

a. Atlantic cod has been below a biologically safe limit since 2004 in ICES areas VIIe-k (except 2011-2012), and ICES advise zero catch in 2020 in areas VIIe-k to allow the species to recover;[114]

b. The SSB for European seabass has been declining since 2009 and is currently only just above a biologically safe limit and it is below precautionary biomass limits;[115]

c. The SSB for whiting has decreased since 2010 and is estimated to have been below a biologically safe limit since 2018;[116] and

[112] See NPPF para 176 and CD 12.1 Defra Guidance on Habitats Regulations Assessments, p.5.
[113] CD 5.8, para 4.11.
[114] See para 4.3.8 Waugh proof.
[115] See para 4.3.12 Waugh proof.
[116] See para 4.3.12 Waugh proof.

d. Celtic sea herring is undergoing a period of recovery following a stock collapse in 2004, and the status of the stock in the Bristol Channel is uncertain.[117]

The Appellant has not proved beyond reasonable scientific doubt that it is right to compare predicted impacts of HPC to the large ICES stock areas that it suggests contain the relevant populations

143. A key area of disagreement concerns the appropriate population against which to compare predicted losses of the marine assemblage species. The EA submits that the Appellant has not proved beyond reasonable scientific doubt that the large ICES stock areas it proposes contain the relevant population of European seabass, Atlantic cod and whiting appropriate for conducting a Habitat Regulations Assessment within the Severn Estuary. Comparison with such large populations inappropriately dilutes the predicted impacts of HPC and fails properly to consider the impact on the integrity of the protected sites in question.

144. In answer to your question, Dr Jennings said that identification of the appropriate population size involved scientific judgment. He very much appeared to acknowledge that there is reasonable scientific doubt as to the size of the appropriate populations. That conclusion is supported by the following reasons.

145. First, ICES stock assessments were primarily designed in order to give advice on sustainable fishing. They were not designed for the purpose of Habitat Regulations Assessment of plans or projects, and they do not relate to the particular designates SACs and Ramsar sites that are the subject of this Appropriate Assessment.

146. Secondly, the Appellant's reliance on the international credentials of ICES,[118] overlooks the fact that the Secretary of State has not made ICES a statutory consultee in the UK when approval is sought for a plan or project. Moreover, there is no guidance of the Secretary of State (or indeed anyone else) to suggest the use of ICES stock assessments for the purposes of assessing the impact of plans or projects under the Habitat Regulations. In those circumstances, it would be quite wrong to treat ICES

[117] See para 4.3.13 Waugh proof.
[118] Jennings proof, Appendix C.

stock assessments as somehow representing the default position and requiring justification for taking a different approach.

147. In answer to your questions, Dr Jennings said he "*believed strongly in deferring to ICES*". His approach ignores the legal requirement to ask whether there is reasonable scientific doubt and replaces it with a strong presumption that ICES has all the answers - despite ICES existing to answer different questions to those facing competent authorities.

148. Even ICES itself has made pronouncements that sound a note of caution. For example, in 2021 the ICES Stock Identification Method Working Group recognized the potential mismatch between traditional stock subdivisions and true biological stocks:[119]

> "*traditionally, exploited stocks have been assessed and managed according to geographical features and ICES stock subdivisions. As more research is conducted though, it is evident that only a fraction of stocks are organized according to such subdivisions. In reality, they are far more dynamic and complex. SIMWG's work is aimed at minimizing mismatches between true biological stocks and traditional management areas. It plays a significant role in forming improved approaches to define stock units and promote evidence-based management approaches.*"

149. Thirdly, the Appellant is unable to point to any previous example where a competent authority in the UK assessed impacts of a proposed plan or project by comparing those impacts to ICES stock assessments extending over vast areas. The novelty of what the Appellant is proposing is significant and it would set a precedent for the consideration of other plans and projects affecting marine species.

150. Fourthly, the Appellant and Cefas have previously taken a very different approach to that now urged on the Secretary of State. The Appellant did not compare predicted losses from HPC to ICES stock assessments in its original DCO application.[120] Instead, it concluded that for all marine finfish except for blue whiting, the populations were limited to the Bristol Channel and eastern Celtic Sea, with relatively little mixing. Similarly, Cefas did not recommend comparison with much

[119] CD 9.72
[120] See CD 7.2 (TR 148) and Waugh proof, para 4.4.9.

larger ICES stock areas when advising NRW in 2017 in relation to the Swansea Tidal Lagoon project.[121]

151. Fifthly, Dr Jennings' own evidence demonstrates that the populations advanced by the Appellant are too large:

a. Dr Jennings said that what matters is "*where the adult populations spawn, the populations of which they are part, and the transport of their progeny as eggs and larvae*".[122] On that basis we need to look at where the eggs and larvae come from that are transported to Bridgwater Bay and which fish lay those eggs and larvae;
b. The Appellant's evidence does not, however, establish that all the fish making up the SSB figures it proposes in fact have an actual (or even potential) connection to Bridgwater Bay;
c. Taking European seabass as an example, Dr Jennings accepted in cross-examination that seabass in ICES Division 4b (which covers the north sea as far as Norway and Denmark) do not contribute to eggs and larvae that end up in Bridgwater Bay, yet those seabass are included as part of the SSB against which the Appellant compares predicted HPC impingement losses;
d. It is no answer to say, as Dr Jennings did, that the SSB is unevenly distributed over ICES stock areas and that relatively few seabass live in Division 4b. The fact is that there is no evidence of the percentage distribution of the SSB between divisions, no evidence of precisely where the eggs and larvae that enter Bridgwater Bay each year come from or which fish lay those eggs. All we have is an admission that the Appellant's SSB includes fish that have no connection with Bridgwater Bay and which are therefore irrelevant for the purposes of assessing the impact of HPC. This underlines the problem of using ICES stock areas created for fisheries management purposes for the entirely different purpose of conducting an Appropriate Assessment. For fisheries management purposes it is unnecessary to establish a connection between a particular designated site and the spawning population. By contrast, in an Appropriate Assessment it is absolutely essential to know how big the population is that

[121] CD 9.118 and Waugh rebuttal, para 2.1.1C.
[122] Jennings rebuttal, para 2.21.

contributes to the eggs, larvae and juvenile fishes in Bridgwater Bay. The Appellant's evidence does not answer that question;

152. Sixthly, in relation to Atlantic herring, the Appellant's PELTIC survey does not provide a reliable identification of the relevant population for undertaking an appropriate assessment of the impact of HPC on herring. The work of Dr Clarke,[123] and the representations by the Devon and Severn Inshore Fisheries and Conservation Authority,[124] show that it is highly likely that herring in the Bristol Channel/Severn Estuary have some degree of separation or subpopulation/metapopulation structure and that the relevant population is smaller than ICES Division 7f.[125] The PELTIC survey merely estimated the total number of herring in ICES Division 7f, but it did not involve any genetic work and so it cannot tell us the size of the subpopulation(s) of herring likely to be affected by HPC.

153. Dr Jennings' response to that objection was unpersuasive. He explained a "*simple calculation*" that he had "*done in [his] head*" whereby he assumed that 10% of the herring biomass from Division 7f came from one subpopulation stock, and then concluded that the predicted rates of impingement would not be a concern because impingement levels would not be the driver of population dynamics. That 'analysis' is flawed because we do not know the size or distribution of the sub-population(s) that are likely to be impacted by HPC. Dr Jennings' guess that the sub-population might constitute 10% of the total biomass of Division 7f is just that -a guess. Dr Clarke's work suggests that there is a spawning population at nearby Minehead.[126] It is not clear if herring in Bridgwater Bay constitute 100% of that spawning population or some smaller percentage. Dr Jennings' "*simple calculation*" is not informed by any data or assessment and he even said he had not reviewed Dr Clarke's study in any detail. All of this points to the fact that there is an obvious concern that HPC will adversely affect a smaller sub-population of herring and yet the Appellant has provided no actual evidence capable of removing reasonable scientific doubt as to the nature and extent of that adverse effect.

[123] CD 9.114 and see also Waugh proof, para 4.7.4ff.
[124] CD 10.1.
[125] CD 10.1.
[126] Waugh proof, Figure 1.

154. Where that leaves us is that the Appellant's population figures are demonstrably too large for Atlantic cod, whiting and European seabass and inappropriate for use in an Appropriate Assessment. The lack of recognition of strong evidence to support fine scale herring populations very close to the intake, coupled with inadequate herring surveys undertaken by Appellant, also means that Atlantic herring population proposed by the Appellant is unreliable. Mr Waugh by contrast has conducted a thorough literature review and arrived at population figures that are greater than the Appellant proposed in its DCO application, and greater than Cefas proposed for the assessment of Tidal Lagoon Swansea Bay only 30 miles away. It cannot be said that Mr Waugh has been excessively precautionary. The Appellant's suggestion that seabass from outside his population areas may spawn and their eggs reach Bridgwater Bay in some years does not invalidate his assessment. Taken at its highest, the Appellant's criticism merely shows that Mr Waugh's assessment is precautionary. But that comes nowhere close to saying that the relevant population is as large as the Appellant's proposed ICES stock areas.

155. Another important point flows from this: if the Appellant's population figures are demonstrably too large then it follows that Dr Jennings' stock assessment carried out on those population figures is also flawed. His stock assessments are also not precautionary because their input is the RIMP data which carries considerable uncertainty with it. No doubt that is why no such stock assessment was attempted in support of the original DCO, and why the variation application did not include one.

Predicted impact on the assemblage species

156. It is important to recall that the pelagic cap is agreed not to have a benefit for European seabass, Atlantic cod and whiting (and so the factor is 1.0).[127] Consequently, the AFD was to be the principal form of mitigation for those species. Although the agreed pelagic cap factor for herring is 0.23, it is notable that in its DCO application the Appellant predicted that the AFD would deflect 95% of herring from the intakes.[128]

[127] CD 6.5 Statement of Common Ground, table 1.
[128] CD 1.11, table 19.

Consequently, the loss of the AFD will result in a significant increase in impingement of all four marine assemblage species.

157. The EA predicts the following impacts on the marine assemblage species as a percentage of spawning population size:[129]

European seabass	2.1
Atlantic cod	15.7
Whiting	6.5
Atlantic herring	4.0

158. Mr Waugh explained that impacts of that magnitude could adversely affect the structure and function of these typical species of the marine assemblage and thereby undermine the conservation objective for the "*Estuaries*" feature, giving rise to an adverse effect on the integrity of the SAC and the Ramsar site.[130]

HPB (and HPA) versus HPC

159. In SPP106,[131] the Appellant sought to calculate the impact of HPC relative to HPB and HPA. It argued that:

a. the reduction in impingement mortality associated with the closure of HPB will exceed the increase in impingement mortality at HPC for Atlantic herring, allis shad and twaite shad; and

b. the impingement mortality of HPC will be less for all species (apart from salmon and sea trout) than it was between 1976 and 1999 when HPA and HPB were operating

160. The Appellant's argument that closing HPB creates "*headroom*" for HPC to operate is beguilingly simple, but it does not withstand scrutiny.

[129] CD 6.26 (ID 12), Table C.
[130] Waugh proof, section 6.2.
[131] CD 7.9.

161. First, there is no evidence that HPB (or indeed HPA) has not adversely affected the fish of the SACs/Ramsar site -in particular because there was no baseline study before those projects began operating, nor any control or impact monitoring.[132] The Appellant's underlying assumption of no adverse effect from HPA/HPB is unproveable as there is no data prior to their opening upon which to make a comparison.

162. In evidence in chief, Mr Goodwin referred to the Court of Appeal of Northern Ireland's decision in ***An application by Friends of the Earth Limited for Judicial Review*** [2017] NICA 41.[133] The case concerned a challenge to the Minister's refusal to issue a Stop Notice to the owners of the bed of Lough Neagh and a number of businesses involved in sand extraction from Lough Neagh (an SPA and Ramsar site). The Minister's reasons included that "*it would not be a proportionate response in a situation where there is no evidence that the dredging, which has been going on since long before the site's designations, is having any impact on the environmental features of the lough.*" (see [12]). Mr Goodwin gave this case as an example of the court having to grapple with a situation in which there is no established baseline against which to judge the effect of a long-standing project.

163. The important point that emerges from the judgment (consistently with Mr Goodwin's explanation in evidence in chief) is that the precautionary principle means that the absence of evidence of harm should not be equated with the absence of harm. Instead, it must be shown by positive evidence that the project is not causing an adverse effect; unless that is demonstrated the decision-maker must proceed on the assumption that there is an absence of evidence that the project is not having an unacceptable impact:

> "*[34] We return to the decision under challenge and the statement of the Minister in the decision letter that there is "no evidence that the dredging … is having any impact on the environmental features of the lough". This is the wrong approach. It is acknowledged by the Department that these operations are likely to have a significant effect on the environment. It is not known what that effect will be. The precautionary principle applies. It operates on the basis that there should be no planning permission*

[132] Edwards proof, section 7.2.
[133] CD 13.23.

until it is established that there is no unacceptable impact on the environment. The Minister's decision proceeds on the basis that there is an absence of evidence of an unacceptable impact on the environment. The proper approach is to proceed on the basis that there is an absence of evidence that the operations are not having an unacceptable impact on the environment.

…

[37] Given the repeated finding that the operations are likely to have significant impact on the environment the decision maker cannot simply put in the balance the absence of evidence of harm. It is not considered a sufficient response to the content of the decision letter to refer to the options and the references to the precautionary principle in the briefings to the Minister. What has been disregarded in the letter of decision, where it deals with the Stop Notice, is that these operations are considered likely to have significant impact, that the nature and extent of that impact has not been established, that prior to the grant of permission is the requirement to establish that there will be no significant impact and that it is imperative that the precautionary principle be applied. What must be put in the balance is the absence of evidence that there is no harm. To approach the matter with a requirement for evidence of harm is the negation of the precautionary principle." (emphasis in original)

164. Mr Goodwin argued that there is positive evidence that HPB has not had an adverse effect on any of the protected sites. To see whether that is the case, it is necessary to look now at what, if anything, the RIMP data can tell us about HPB's effect.

165. Secondly, the RIMP data cannot be used to ascertain the impact of HPB (or indeed HPA) on fish of the SACs/Ramsar site. The Appellant has sought to identify trends in the 37 years of RIMP data, but as the EA explained in TB019,[134] there are such large uncertainties in the data set it is not possible to identify any trends with confidence. In particular:

a. The EA's Appropriate Assessment concluded that the change in overall fish abundance (all species combined) over time is too weak to conclude whether overall fish abundance has increased or decreased between 1981 and 2017, and that it may not be possible for the RIMP to detect a reduction in fish abundance smaller than 50% due to substantial variability within the data;[135]

[134] CD 8.18.
[135] CD 4.1, p35, section 2.4.

b. That accords with the views of NRW as expressed in the latest feature condition assessment for the Severn Estuary SAC.[136] NRW said that the "*trend assessment [for twaite shad] is based on the long term data set from the HP power station*" and it considered that a "*low degree of confidence*" should be attached to the trend assessment based on the RIMP;

c. The highest Dr Jennings put it was that there are "*signals*" from the data one can detect if the RIMP data is "*disentangled by sub-setting and focusing on specific age classes*";[137]

d. Even that disentangling exercise has its limitations because Dr Jennings recognizes that "*there is weak evidence of autocorrelation in the time-series of numbers at age, so the strength of some correlations may be slightly overestimated*;[138]

e. Dr Jennings also recognises that reductions in population will first occur in areas of lower habitat suitability.[139] If as e.g. Mr Waugh, Mr Colclough and Dr Stewart (D&S IFCA) argue, the Severn Estuary is an area of high habitat suitability, the RIMP will not be likely to reflect changes occurring in the wider population.

166. Thirdly, even if it were possible to ascertain a trend in the RIMP data, that does not demonstrate that HPB has not adversely affected the designated sites because the 37 year RIMP study coincides with a significant decrease in water abstraction from the Severn Estuary making it impossible to attribute any positive trend in the RIMP data to HPB not having an effect as opposed to a reduction in abstraction generally. This is illustrated in Figure 4 in Dr Edwards proof which shows that the RIMP study began in 1981 when water abstraction in the Bristol Channel was just below its historic peak.[140] The steady decline in the volume of water abstracted during the 37 year RIMP study to nearly 50% of its peak is likely to have masked any impact of HPB that might otherwise have been detectable in the RIMP data.

[136] CD 12.28, p28.
[137] Jennings proof, Appendix D, para 10.15.
[138] Jennings proof, Appendix H, para 14.4.
[139] Jennings proof, Appendix H, para 14.8.
[140] Edwards proof, p15.

167. Fourthly, even the Appellant's comparisons between the impact of HPB and HPC do not demonstrate that closure of HPB[141] will certainly create "*headroom*" for HPC to operate in.

168. The analysis in SPP106 sought to compare HPB to HPC by comparing their relative abstraction rates alone i.e. the simple comparison of abstraction rates does not try to calculate numbers of equivalent adults likely to be impinged or compare predictions of equivalent adults to the population to estimate the percentage impact on the population. As Dr Edwards explains, the calculation is simply: HPC equivalent cumecs with LVSE intakes = HPB abstraction rate x LVSE intake head factor x HPC pelagic cap (where applicable).[142]

169. Even this simplified comparison calculation is highly sensitive to the parameter used for the intake intercept area factor:

a. The figures in Table 5 of SPP 106[143] are derived from a calculation using the Appellant's figure for the intake intercept area factor stated in SPP 105 i.e. 0.726;[144]
b. The figures in Dr Edwards revised figure 13,[145] are based on the same calculation but using the agreed factor of 1.0 for the intake intercept area factor;
c. Making that single change significantly affects the comparison and shows HPC performing worse than HPB in relation to whiting, cod and bass.

170. The calculation is also highly sensitive to the figure used for the pelagic cap. This can be demonstrated with reference to Table 6 in Dr Jennings' proof which sets out the ratio mortality of HPC to HPB in the final column.[146] A number greater than 1 in that column indicates higher mortality at HPC than HPB. The calculation is flow

[141] The continuing abstraction associated with HPB's defueling operations and the absence of any fixed date for the total cessation of water abstraction is explained in Dr O'Donnell's note: CD 6.6e (ID18).
[142] Edwards proof, para 7.2.3.
[143] CD 7.9, p22.
[144] NB the Appellant originally used a figure of 0.827, but changed it to 0.726 in SPP 105.
[145] CD 6.6c. NB the original figure 13 in her proof used the figure of 1.394 which has since been superseded by the agreed factor of 1.0.
[146] Jennings proof, p30.

ratio (3.836) x intake intercept area factor (1.0) x intake velocity cap (the figures for which are agreed)[147] x FRR mortality. For shad and herring, Dr Jennings predicts lower mortality associated with HPC than HPB (0.88). But Dr Jennings agreed in cross-examination that if the agreed upper confidence figure for the pelagic cap (0.28) is used in the calculation instead of the factor of 0.23, then the comparison shows HPC has a greater effect than HPB (1.074).

171. Given the sensitivity of this simple comparison exercise to the inputs, the fact that the simple comparison excludes consideration of EAVs and comparisons with the population, and the absence of evidence to show HPB has not adversely affected the protected sites, it is not possible to be certain that closure of HPB would create "*headroom*" for HPC to operate.

Conclusion

172. The EA invites you to recommend that the Secretary of State dismiss the appeal on the basis that he cannot be certain that the project would not adversely affect the integrity of the protected sites.

Richard Moules
Landmark Chambers
24 June 2021

[147] CD 6.5 Statement of Common Ground, table 1.

From: [redacted]
To: HPCNuclear
Subject: Reference: PE171120. Plant Not Affected Notice from ES Pipelines
Date: 30 March 2022 12:40:21

HPCNuclear
Planning Inspectorate

30 March 2022

Reference: EN010102

Dear Sir/Madam,

Thank you for your recent plant enquiry at: Hinkley Point

I can confirm that ESP Utilities Group Ltd has no gas or electricity apparatus in the vicinity of this site address and will not be affected by your proposed works.

ESP Utilities Group Ltd are continually laying new gas and electricity networks and this notification is valid for 90 days from the date of this letter. If your proposed works start after this period of time, please re-submit your enquiry.

Important Notice

Please be advised that any enquiries for ESP Connections Ltd, formerly known as British Gas Connections Ltd, should be sent directly to us at the address shown above or alternatively you can email us at: PlantResponses@espug.com

ESP have provided you with all the information we have to date however, there may be inaccuracies or delays in data collection and digitisation caused by a range of practical and unforeseeable reasons and as such, we recommend the following steps are taken as a minimum before work is commenced that involves the opening of any ground and reference made to HSG47 (Avoiding danger from underground services).
A. Plans are consulted and marked up on site
B. The use of a suitable and sufficient device to locate underground utilities before digging (for example the C.A.T and Genny)
C. Trial holes are dug to expose any marked up or traced utilities in the ground
D. If no utilities are shown on any plans and no trace is received using a suitable and sufficient device, trial holes are dug nonetheless using hand tools at the

location or at regular intervals along the location that the work is being carried out depending on the length of excavation work being undertaken
E. All location work is carried out by individuals with sufficient experience and technical knowledge who may choose to control this activity under a Safe System Of Work

Yours faithfully,

Plant Protection Team
ESP Utilities Group Ltd

[redacted]

Bluebird House
Mole Business Park
Leatherhead
KT22 7BA
☎ [redacted] 🗎 [redacted]

http://www.espug.com

Historic England

Ms Helen Lancaster
Planning Inspectorate
Temple Quay House
2 The Square
Bristol
BS1 6PN

Direct Dial: [redacted]

Our ref: PL00769802

4 April 2022

Dear Ms Lancaster

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations - Regulations 10 and 11.

Application by NNB Generation Company (HPC) Limited for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1. Request for an EIA Scoping Opinion.

Ref: EN010102-000084

Thank you for consulting us about the above EIA Scoping Opinion.

Historic England has reviewed the information submitted in the scoping report from the applicant and our own records for the proposed development area. We have no comments to make on the Scoping Report.

If you have any queries about any of the above, or would like to discuss anything further, please contact me.

Yours sincerely,

M Barge

Melanie Barge
Inspector of Ancient Monuments
[redacted]@HistoricEngland.org.uk

Helen Croxson
Maritime and Coastguard Agency
Bay 2/24
Spring Place
105 Commercial Road
Southampton
SO15 1EG

www.gov.uk/mca

Ref: EN010102 - 000084

25th April 2022

Dear Helen,

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11

Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development)

Scoping consultation and notification of the Applicant's contact details and duty to make available information to the Applicant if requested

Thank you for your letter dated 28 March 2022 inviting the Maritime and Coastguard Agency (MCA) to comment on the scoping consultation for the material change to Hinkley Point C New Nuclear Power Station. The MCA would like to respond as follows:

We note that the Material Change to the Development Consent Order consists of:

- Removal of the requirement to install an acoustic fish deterrent system;
- Amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions;
- Relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building;
- Amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB); and
- Four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e., maintenance periods).

The MCA has an interest in the works associated with the marine environment, and the potential impact on shipping, the safety of navigation, access to ports, harbours and marinas and any impact on our search and rescue obligations. The MCA would expect the impact of the above changes on shipping and navigation to be considered in the scoping documents.

We note in table 7-1 on page 57 of the Scoping Report that the proposed changes in the marine environment do not alter the assessment of impacts to shipping and navigation as presented in the original Environmental Statement. The report states "*Further, there is no pathway of effects between land-based changes associated with the ISFS, meteorological mast, Hinkley Point substation or sluice gate storage structures and the marine environment, therefore no effects on shipping and navigation are anticipated".* We also note in section 2.1.18 that there is no proposed change to the remainder of the cooling water infrastructure design, which remains as presented in the original Environmental Statement.

The MCA would therefore expect the worst-case scenario to remain as assessed in the original Environmental Statement and supporting Navigation Risk Assessment (NRA). We would expect no other parameters detailed in the NRA to have changed, resulting in any greater significance in terms of the Environmental Statement. There should be no change in risk with regards to safe navigation of vessels and/or search and rescue.

The MCA would expect all works in the marine environment to be undertaken in accordance with the Port Marine Safety Code and its Guide to Good Practice. The Marine Safety Management Systems should be updated accordingly as per the Code.

We hope you find this response useful at scoping stage.

Yours sincerely,

Helen Croxson
Marine Licensing and Space Launch lead
UK Technical Services Navigation

Helen Lancaster
Senior EIA Advisor

HPCNuclear@planninginspectorate.gov.uk

Planning Services
Development Management
Phoenix House
Phoenix Lane
Tiverton
Devon
EX16 6PP

Tel: [redacted]

e-mail: [redacted]@middevon.gov.uk

Your Ref: EN010102-000084

My Ref: 22/00627/PE

Date: 25th April 2022

Contact: Mr Adrian Devereaux
Area Team Leader

Dear Ms Lancaster,

Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11

Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development)

I am writing further to your consultation on the scoping opinion for the above development.

We have read through the EIA documents that are currently listed on your website and I can confirm that we have no comments to make.

Yours faithfully,

Adrian Devereaux
Area Team Leader

Marine Management Organisation

Marine Licensing
Lancaster House
Hampshire Court
Newcastle upon Tyne
NE4 7YH

[redacted]
www.gov.uk/mmo

Hinkley Point C Case Team
Planning Inspectorate
HPCNuclear@planninginspectorate.gov.uk

(Email only)

MMO Reference: DCO/2013/00023

25 April 2022

Dear Sir/Madam,

Planning Act 2008, Hinkley Point C Nuclear Power Station

On 28 March 2022, the Marine Management Organisation (the MMO) received notification from the Planning Inspectorate (PINS), that the NNB Generation Company (HPC) Limited (the Applicant) has asked the Planning Inspectorate on behalf of the Secretary of State for its opinion (a Scoping Opinion) as to the information to be provided in an Environmental Statement (ES) relating to the Proposed Material Change (1) to the Development Consent Order (DCO).

This document comprises the Marine Management Organisation's (MMO) comments on the EIA Scoping Report and supporting appendices.

The MMO reserves the right to modify its present advice or opinion in view of any additional matters or information that may come to our attention.

Yours Faithfully

Nicola Wilkinson
Marine Licensing Case Officer

D [redacted]
E [redacted]

Copies to:
Tracey Champney (MMO) – Case Manager:
[redacted]
Lindsey Mullan (MMO) – Senior Case Manager:
[redacted]

Contents

1 Project Background

1.1 Hinkley Point C (HPC) new nuclear power station under development, for which a Development Consent Order (DCO) was granted in 2011.

1.2 HPC will comprise a range of buildings above ground, along with the seabed and sub-surface structures that comprise the cooling water system. This cooling water system will require offshore works including the construction of water intake and outfall structures, bored underground tunnels connecting the cooling water to pumphouses and turbine halls, and a Fish Recovery and Return System (FRS).

1.3 Since the DCO was consented in 2013, the Applicant has submitted four non-material change applications. The MMO note that this application seeks to amend the following:

- Removal of the requirement to install an acoustic fish deterrent system;
- Amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions;
- Relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building;
- Amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB); and
- Four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e. maintenance periods).

1.4 It is the understanding of the MMO that the only change within its jurisdiction is the removal of the requirement to install an acoustic fish deterrent system. As such no other changes other than this activity have been considered further by the MMO.

2 Environmental Impact Assessment (EIA) Scoping Report

2.1 With regard to Section 5.5.10 – Due to the potential impacts to the marine environment from the removal of the Acoustic Fish Deterrent, the MMO consider that regard should be given to the Welsh National Marine Plan.

2.2 With regard to Table 7.1 – The MMO do not consider that marine water and sediment quality should be scoped out at this stage. As noted in section 9.4.5 of the EIA Scoping Report, changes in the quantity of dead fish discharged could have implications for marine water quality which require further assessment.

2.3 With regard to Table 7.1 – The MMO do not consider that cumulative effects can be scoped out at this stage. As noted in both sections 3.1.5 and 8.1.3 of the EIA Scoping Report, further consideration needs to be given to the potential effects of other plans and projects as the relevant list of plans and projects may have changed since the original assessment.

2.4 With regard to Section 7.4.1 – The MMO note that the applicant is scoping out climate change from the updated EIA, and would like clarification on whether climate change will be taken into account in the assessment of the significance of effects on marine ecology receptors?

2.5 With regard to Table 8.1 – The MMO suggest marine water quality should be scoped is, as per comment on Table 7.1 of the EIA Scoping Report.

2.6 With regard to Table 9.1 – The MMO would like to highlight that the Marine and Coastal Access Act (2009) is also relevant to the consideration of potential effects on Marine Conservation Zones (MCZ).

2.7 With regard to Table 9.1 – The MMO recommend the Water Framework Regulations should be included within this table.

2.8 With regard to Table 9.1 – The table should refer to the 'Marine Strategy' rather than the 'Marine Strategy Framework Directive'.

2.9 With regard to Table 9.2 – The MMO suggest that the Welsh National Marine Plan is also included here, for the reason noted in paragraph 2.1 of this response.

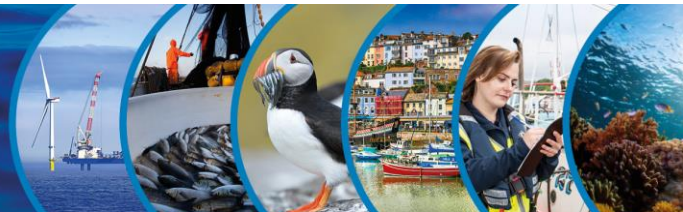
2.10 With regard to Section 9.8 – This section provides little detail on the proposed assessment methodology for marine ecology receptors. The MMO recommend that evidence available from the detailed assessment for the Water Discharge Activity permit application may be suitable to inform the EIA.

2.11 With regard to Section 9.8 - The section provides no information on how the marine water quality assessment will be carried out. The MMO recommend that previous detailed assessments that have been carried out for the project, that the evidence available from the assessment may be suitable to inform the EIA.

2.12 With regard to Section 11.1.6 – The MMO would expect the Environmental Statement to be supported by various additional assessments, including an MCZ assessment, Habitats Regulation Assessment, Waste Framework Directive Assessment, Marine Plan Assessments (for both the English South West Marine Plan and Welsh National Marine Plan), as well as a Water Framework Regulations Assessment (PINS Advice Note 18) and a Marine Strategy Assessment.

Yours Faithfully

Nicola Wilkinson
Marine Licensing Case Officer



From:	[redacted]
To:	HPCNuclear
Cc:	[redacted]
Subject:	EN010102 - Hinkley Point C New Nuclear Power Station Material Change 1 - EIA Scoping Notification and Consultation - National Highways Response
Date:	12 April 2022 16:24:48
Attachments:	[redacted]

Dear Joseph,

EN010102 - Scoping Opinion for proposed material change to The Hinkley Point C (Nuclear Generating Station) Order 2013

Thank you for inviting National Highways to provide comments on the above request for a scoping opinion. We note the application is seeking to amend element of the scheme consented under the DCO as below:

- Removal of the requirement to install an acoustic fish deterrent system
- Amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions
- Relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building
- Amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB)
- Four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e. maintenance periods)

Based on the scope of the proposed amendments we consider the application unlikely to result in a material change to the traffic impact associated with the construction of Hinkley Point C. We would however expect the applicant to quantify any changes to the forecast traffic impact as a result of the proposal, as part of any future application.

Kind regards,

Sally

Sally Parish, Planning Manager (Highways Development Management), Operations
National Highways | Ash House | Falcon Road | Sowton Ind. Estate | Exeter | EX2 7LB
Phone: [redacted]
Web: http://www.nationalhighways.co.uk

Please note I am currently working from home and can be contacted by phone on the above mobile number

Date: 22 April 2022
Our ref: 387570
Your ref: EN010102-000084

Helen Lancaster
Senior EIA Adviser
The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

Customer Services
Hornbeam House
Crewe Business Park
Electra Way
Crewe
Cheshire CW1 6GJ

[redacted]**@naturalengland.org.uk**

Dear Helen,

The Marine and Coastal Access Act 2009 (as amended)
The Environmental Impact Assessment Regulations 2017 (as amended)
The Marine Works Environmental Impact Assessment Regulations 2017 (as amended)
The Conservation of Habitats and Species Regulations 2017 (as amended)
The Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended)
The Conservation of Habitats and Species (Amendment - EU Exit) Regulations 2019
HPC Development Consent Order 2013 (as amended)

Proposal: EIA Scoping Opinion for Hinkley Point C DCO Material Change 1:

- removal of the requirement to install an acoustic fish deterrent system;
- amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions;
- relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building;
- amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB); and
- four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e. maintenance periods).

Location: Hinkley Point C terrestrial and offshore construction sites

Applicant: NNB Generation Company (HPC) Ltd

This reply comprises our statutory consultation response under the provisions of the Hinkley Point C (Nuclear Generating Station) Development Consent Order 2013 (as amended), , the Environmental Impact Assessment Regulations 2017 (as amended), The Marine Works Environmental Impact Assessment Regulations 2017 (as amended), the Conservation of Habitats and Species Regulations 2017 (as amended), the Conservation of Offshore Marine Habitats and Species Regulations 2017 (as amended), The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, the Marine and Coastal Access Act 2009 and Section 28 of the Wildlife and Countryside Act 1981 (as amended).

Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.

Thank you for your letter of 28 March 2022 in which you consulted Natural England on NNB Generation Company Limited's request for an Environmental Impact Assessment Scoping Opinion for a material change to the Development Consent Order for the Hinkley Point C New Nuclear Power Station (Material Change 1).

Natural England's comments concern the applicant's report submitted with the request for a Scoping Opinion: *Hinkley Point C Material Change Application EIA Scoping Report* (NNB GenCo Document Number: 00977468 - Revision 03).

We agree with the report's identification of aspects to be scoped out and scoped into the EIA.

We have one comment to make on Table 7-1 (*Summary of the aspects to be scoped out of further assessment*):

> Pages 54 - 55 (Terrestrial Ecology and Ornithology). The applicant's remarks on potential impacts on fish-eating (piscivorous) birds, which may be caused by not installing an acoustic fish deterrent system (AFD), appear to scope out this aspect from the EIA. However, potential impacts on seabirds should be considered under "Marine Ecology" not "Terrestrial Ecology and Ornithology", which is confirmed in Section 8 (Page 88) of the report. We assume that the updated Environmental Statement (ES) will include an analysis, as should the new Habitats Regulations Assessment (HRA), which is required under Regulation 63 of the Habitats Regulations 2017 (as amended).

We agree that the most up to date scientific evidence available must be used to inform the determination of this application. The public inquiry on the application to vary the Environmental Permit (EPR/HP3228XT) for HPC Operational Water Discharge Activity to remove the requirement to install an AFD system concluded in June 2021. It is important that if new evidence or new analyses of existing data that may inform our understanding of potential impacts on marine fish, marine mammals and seabirds arising from not installing an AFD have become available since the public inquiry, then such information should be included in the updated Marine Ecology chapter of the ES and the new HRA to be prepared to inform this application. It would be helpful that if any information presented in the ES and HRA submitted to the Environmental Permit public inquiry in June 2021 has been revised subsequently in the new documentation submitted to inform the application for a material change to the DCO, it is flagged clearly to aid consultees in reviewing the material. If no changes have been made subsequent to the June 2021 public inquiry, then this should be stated.

****

In accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England expects to be consulted on any additional matters that may arise as a result of, or are related to, the present proposal. This includes alterations to the application that could affect its impact on the natural environment. Natural England retains its statutory discretion to modify its present advice or opinion in view of any and all such additional matters or any additional information related to this consultation that may come to our attention.

Yours sincerely

Barry Phillips
Sustainable Development
Natural England – Wessex Team

NORTH DEVON COUNCIL
Planning, Housing and Health
Lynton House
Commercial Road
Barnstaple
EX31 1DG

TOWN AND COUNTY PLANNING ACT 1990

PRE-APPLICATION ENQUIRY RESPONSE

Applicant:	Joseph Briody	**Application No:**	ENQ/0251/2022
Address:		**Application Type:**	Pre Application Enquiry
Agent:	Joseph Briody	**Date of Registration:**	28 March 2022
Address:		**Date of Decision:**	6 April 2022
Proposal:	EIA scoping opinion new nuclear power station material change 1		
Location:	Hinkley Point C Hinkley Somerset		

Thank you for consulting North Devon Council on this matter.

The Council has no observations to make in this instance.

Mr A. Spiers
Case Officer

Date: 13 April 2022
My Ref: 22/P/0851/SCON
Website: www.n-somerset.gov.uk/contactplanning

Development Management
Development and Environment
Post Point 15
North Somerset Council
Town Hall
Weston-super-Mare BS23 1UJ
DX 744900 Clevedon

The Planning Inspectorate
Helen Lancaster (Senior EIA Adviser)
Your Ref: EN010102-000084
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol
BS1 6PN

Dear Sir/Madam

Town and Country Planning Act 1990

Application No: 22/P/0851/SCON
Description: Consultation request from the Planning Inspectorate to North Somerset Council in relation to the application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development). The Applicant has asked the Planning Inspectorate on behalf of the Secretary of State for its opinion (a Scoping Opinion) as to the information to be provided in an Environmental Statement (ES) relating to the Proposed Development
Location: Hinkley Point C Power Station, Hinkley Point C Connection Project, Between Bridgwater In Somerset And Seabank Substation, North Of Avonmouth., ,

Thank you for consulting us in respect of the above. North Somerset Council would like to make the following **comments:**

Whilst North Somerset Council do not intend to comment on all aspects of the proposals which is matter for consideration of the Planning Inspectorate, we wish to provide the following comments:

1. Climate Change: North Somerset Council declared a climate emergency in February 2019. Since then, North Somerset Council has been dedicated to combating Climate Change agreeing to become carbon neutral by 2030. Therefore taking this into account, whilst North Somerset Council does not have any objection to the amendments to the approved scheme in principle, the North Somerset Council Sustainability Coordinator has recommended that a section on climate changes impacts should be provided for

consideration that includes quantification of greenhouse gas emissions associated with the proposal.

2. Ecology: The North Somerset Council Ecology team believe that the removal of the Acoustic Fish Deterrent will be detrimental to the European Protected site and therefore recommend that a marine specialist is consulted and that suitable mitigation is provided that will offset the detrimental impact prior to the determination of this application.

Yours faithfully

Richard Kent
Head of Planning

From: [redacted]
To: HPCNuclear
Subject: FW: EN010102 - Hinkley Point C New Nuclear Power Station Material Change 1 - EIA Scoping Notification and Consultation
Date: 29 March 2022 14:47:19
Attachments: [redacted]

Joseph

Thank you for this consultation.

Please be advised that the Board have no comments to make.

Kind regards
Sariquia

Please be advised that from 01/05/2019 new Land Drainage Consent application forms are to be used and they can be found on our website at

http://somersetdrainageboards.gov.uk/development-control-byelaws/land-drainage-consents/

Sariquia Purchase
Development Control Support Officer
Somerset Drainage Boards Consortium
Bradbury House
33-34 Market Street
Highbridge
TA9 3BW

Tel: [redacted]
Mobile:
Direct Dial:
Email: SPurchase@somersetdbs.co.uk
Web: www.somersetdrainageboards.gov.uk

[redacted]

25 April 2022
Ref. No. 123 456 789

Sedgemoor District Council
Bridgwater House, King Square
Bridgwater, Somerset TA6 3AR
www.sedgemoor.gov.uk
customer.services@sedgemoor.gov.uk
General enquiries [redacted]

Environmental Services,
Central Operation,
The Planning Inspectorate,
Temple Quay House,
2, The Square,
BRISTOL
BS1 6PN

Dear Sir/Madam,

Ref: EN010102-00084 - Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development).

Scoping consultation and notification of the Applicant's contact details and duty to make available information to the Applicant if requested

The Applicant has asked the Planning Inspectorate on behalf of the Secretary of State, for a Scoping Opinion on the information to be provided in an Environmental Statement (ES) in relation to a proposed Material Change application for Hinkley Point C (HPC) Nuclear Generating Station.

A Development Consent Order (DCO) for HPC was granted in 2013 and since that time, four non-material change applications have been approved which have amended the scheme. It is noted that optioneering and design reviews have indicated that further changes to the approved scheme are required, resulting in this recent proposal which sees the applicant seeking to amend the following elements of the approved scheme:

- Removal of the requirement to install an acoustic fish deterrent system;
- Amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions;
- Relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building;
- Amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB); and
- Four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e. maintenance periods).

The applicant states that these amendments constitute EIA development under Schedule 2 of the Infrastructure Planning (EIA) Regulations 2107, as they make a change to a Schedule 1 development. An updated EIA of the proposed changes will be undertaken, the results of

which will be presented in an updated ES and submitted with the application. The applicant has prepared a Scoping Report to support their request for a Scoping Opinion.

Sedgemoor District Council believes that the Scoping Report is comprehensive and appropriate, and it clearly identifies the aspects to be scoped in and scoped out of the updated EIA. In terms of detail, Table 7-1 summarises the aspects to be scoped out of further assessment for the updated EIA. It is noted that because there is no change proposed to the overall volume of spent fuel and radioactive waste proposed to be stored, the applicant has scoped out "spent fuel and radioactive waste management". "Population and Human Health" is also scoped out. However, given that the change in method of storage will result in an increase to the size and height of the ISFS building, the applicant proposes to undertake a Landscape and Visual Impact Assessment. The inclusion of this assessment is welcomed because it is not clear what impacts the proposed change to the building may have, particularly in terms of visual impact or light pollution, these are areas of particular local concern.

Table 8-1 summarises aspects to be scoped into further assessment for the updated EIA. Two aspects are considered for inclusion, Marine Ecology and Landscape and Visual Impact, as mentioned above. It is noted that the applicant is not proposing to revisit lighting assessments as it is proposed that all operational lighting will be compliant with the Operational Lighting Strategy (OLS) assessed in the original ES. Light pollution is, as noted above, or concern to some local communities in Sedgemoor, and therefore it will be important to ensure that the proposed changes do comply with the OLS.

The LPA has no further comments to make at this stage, but look forward to commenting upon the formal submission of the Material Change application in due course.

Yours Sincerely,

Jo Manley MSc MRTPI
Principal Planning Officer – Infrastructure

From:	[redacted]
To:	HPCNuclear
Subject:	EN010102-000084 - Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development)
Date:	23 April 2022 13:42:50

Dear Helen

I refer to your letter dated 28 March 2022 on the above matter.

I can confirm that we have no comments to make.

Kind Regards

Colin Arnold – Service Manager Planning and Development
[redacted]

Somerset West and Taunton

Environmental Services,
Central Operation,
The Planning Inspectorate,
Temple Quay House,
2, The Square,
BRISTOL. BS1 6PN

Our Ref: HPC/MCSR/JCAB/April 2022
Your Ref: EN010102 - 000084
Date: 24th April 2022

Dear Sir/Madam,

Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development).

Response by the Local Planning Authority to the Screening opinion submitted by the Applicant.

I note that the Applicant has asked the Planning Inspectorate (on behalf of the Secretary of State) for a Scoping Opinion on the information to be provided in an Environmental Statement in relation to the Proposed Material Change Application. I thank you for allowing the Local Planning Authority at Somerset West and Taunton Council the opportunity to comment upon this.

For the most part, the Local Planning Authority at Somerset West and Taunton Council, considers the submitted information to be comprehensive and appropriate. However, there are some comments, which I would be grateful if the Secretary of State could also take into account.

Applicants scoping report – section 7 (Aspects to be scoped out of the updated EIA).

The Local Planning Authority agrees with the applicant's contention that spent fuel and radioactive waste management *per-se* can be scoped out of the updated EIA. It is accepted that the ISFS will hold the same overall volume of spent fuel as envisaged in the original ES, as this volume is determined by the reactor type and design life. However, the change in the method of storage will have a 'knock-on' effect to the size of the storage facility and this may be of concern to the LPA and the local community through its potential to have adverse visual impacts. It is not clear in the current submission that due regard has been paid to the potential for adverse and additional impacts arising from the significant increase in the size of this facility. In this regard, the method of storage and the consequential size of the storage facility are linked. The LPA therefore respectfully suggests that the Secretary of State will need to consider

either, 1) the visual impact of the facility now proposed, and/or 2) the possibility of alternative solutions, such as setting the facility further down into the ground thereby minimising any additional impact.

In Table 7.1 section 25 (Amenity and recreation), the applicant has not referenced this potential for the significant increase in the size of the Interim Spent Fuel Store (ISFS) to impact views from the National Coastal Footpath. This footpath will run adjacent to the proposed new dry store facility, when it is restored to its original position following the agreed diversion during certain construction phases. The proposed increase in size of the facility has the potential to have a detrimental impact on the views from and enjoyment of the footpath at this point. As this footpath is part of the National Coastal trail, this aspect most definitely does need to be included in the assessment and should not be 'scoped out'. It is noted from section 8 that landscape and visual effects have been scoped into the EIA and this is recommended to be the case by the LPA, for this very reason.

Other than the points referenced above, the LPA can agree with the Applicant's summary of what can be 'scoped out' of the required EIA.

Applicants scoping report – section 8 (Aspects to be scoped into the updated EIA).

The LPA accepts that Marine Ecology and Landscape and Visual Impact must be scoped into an updated EIA. At this stage, the LPA will not be commenting on the results or specific findings of these areas. That will come at a later date when the LPA has the opportunity to do so. For now though, the LPA can confirm that the Study Areas, the Assumptions and Limitations, and the Proposed Assessment Methodology, all appear to pick up the relevant considerations and are therefore acceptable.

In terms of specifics, it is recommended that the likely significant effects associated with Marine Ecology should also pick up the potential for fish fatalities as a result of not having the AFD system in place. The LPA is concerned about the possibility for any fish affected by this proposed change to be killed or injured by the water cooling operation and possibly washed up onto shore, having an impact on our marine and shoreline environment and the tourism sector at Minehead, Watchet and the other smaller seaside/riverside locations. On this basis, the LPA would be pleased to hear how EDF Energy intend to manage this issue to avoid this scenario and ensure that they would be able to respond immediately, if there were to be any such occurrences. I think it would be appropriate to address this matter in any formal submission, otherwise it would be an issue that the Council would have to raise as part of its official response to the formally submitted application for the Material Change. This is an issue that has been raised by the LPA with the Applicant before.

With regards to Landscape and Visual Impacts, as previously stated, The LPA is extremely disappointed that this submission does not make reference to the need for a new viewpoint location from the re-instated coastal footpath immediately in front of and in the vicinity of the proposed new enlarged ISFS. The proposed new building, in particular by reason of its significantly increased height, but also its increased length, will be highly likely to have a detrimental impact upon visual amenity from the National Coastal Trail/Footpath over and above that tested in the original E.S. The extent of any such detriment is something that the L.V.I.A. should be examining. Although the

Coastal Footpath is currently diverted whilst certain development operations occur, it will need to be reinstated to, or close to, its original position. This will inevitable be adjacent to the proposed new ISFS. The LPA contends that the Coastal Footpath will be a highly sensitive receptor due to its National status, its wide use by tourists and locals and because of the wide views it should afford of the designated landscape areas inland and the protected areas of the foreshore within the estuary. Therefore, it is crucial that the Applicant provides detailed and appropriate evidence and examination on the potential for impact to visual amenity from the Coastal footpath area which will lie adjacent to the proposed new ISFS. This does not seem to have been referenced in the current submission. The LPA strongly urge the Secretary of State to make sure that the required L.V.I.A., does include this as a new viewpoint location, or locations.

The LPA has no further comments to make at this stage, but will look forward to commenting upon the formal submission of the Material Change proposal in due course. I hope you find this letter is of use, but please do not hesitate to contact me should you require any further help or assistance in this matter.

Yours faithfully.

John Burton
Strategic Lead on Nationally Significant Infrastructure Projects,
Tel: [redacted]
Email: [redacted]

STOGURSEY PARISH COUNCIL
Clerk: Richard Wand
[redacted]
Telephone: [redacted]
Email: [redacted]

The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol, BS1 6PN

Sent by Email only; HPCNuclear@planninginspectorate.gov.uk

Your Ref - EN010102-000084

April 22nd 2022

Dear Sir,

RE: Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development) EIA Scoping Notification and Consultation. Planning Act 2008 (as amended) and The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the EIA Regulations) – Regulations 10 and 11

Stogursey Parish Council would request that a comprehensive Landscape Assessment Survey should be undertaken regarding the Visual Impact on the landscape that an increase in height and general sizing of the proposed Dry Storage Facility would have in the longer term, not solely during the operational period, but far into the future.

Bearing in mind that Hinkley Point "C" has an estimated operational life of 60 years, a Deep Geological Repository Site has yet to be sourced. It is likely that the process for this may be up to 80+ years from sourcing a suitable site to final construction. Therefore the proposed enlarged store could remain as a lone block edifice adjacent to the England Coastal Path long after HPC has been decommissioned and the remainder of the site restored , whilst any Deep Geological Repository Site would still be awaiting completion.

Therefore, Stogursey Parish Council are of the opinion that the long term effects of the size increase should form an integral part of the scoping exercise as it could well have a longer time impact on the coastal path landscape.

Kind regards,

[redacted]

Richard Wand
Clerk to the Parish Council

cc.
Andrew Goodchild
NNB Generation Company (HPC) Limited
The Qube
90 Whitfield Street
London
W1T 4EZ
Email: [redacted]

From: [redacted]
To: HPCNuclear
Cc: [redacted]
Subject: RE: EN010102 - Hinkley Point C New Nuclear Power Station Material Change 1 - EIA Scoping Notification and Consultation
Date: 22 April 2022 12:09:23
Attachments: [redacted]

Good afternoon Joseph,

I can confirm that Trinity House consider this Material Change will have a negligible impact on shipping and marine navigation matters and therefore do not consider any additional information to be required in the Environmental Statement.

Kind regards,

Stephen Vanstone
Navigation Services Officer | Navigation Directorate | Trinity House
[redacted]
www.trinityhouse.co.uk

UK Health Security Agency

Environmental Hazards and Emergencies Department
Seaton House, City Link
London Road
Nottingham, NG2 4LA

nsipconsultations@phe.gov.uk
www.gov.uk/ukhsa

Your Ref: EN010102-000084
Our Ref: 59145

Ms Helen Lancaster
Senior EIA Advisor,
The Planning Inspectorate
Environmental Services
Central Operations
Temple Quay House
2 The Square
Bristol BS1 6PN

22nd April 2022

Dear Ms Lancaster

Nationally Significant Infrastructure Project:
Application by NNB Generation Company (HPC) Limited (the Applicant) for an Order granting Development Consent for the Hinkley Point C New Nuclear Power Station Material Change 1 (the Proposed Development).
Scoping Consultation Stage

Thank you for including the UK Health Security Agency (UKHSA) in the scoping consultation phase of the above application. ***Please note that we request views from the Office for Health Improvement and Disparities (OHID) and the response provided below is sent on behalf of both UKHSA and OHID.*** The response is impartial and independent.

We note that we previously responded at different stages during the original DCO application, which are outlined below.

Stage	**Response Date**
Stage 1	10/12/209
Stage 2	28/09/2010
Stage 2 (update)	25/02/2011
Relevant Representation	12/01/2012

The Applicant is seeking to amend elements of the scheme consented under the DCO via an application for a material change to the Secretary of State. The elements that constitute this

application are summarised below:

- Removal of the requirement to install an acoustic fish deterrent system;
- Amendment to the Interim Spent Fuel Store (ISFS) from wet to dry storage of spent fuel and a change in building dimensions;
- Relocation and re-design of the meteorological mast resulting in the removal of the Meteorological Station building;
- Amendment to retain the existing temporary Hinkley Point substation as a permanent building to supply electricity to Hinkley Point A (HPA)/Hinkley Point B (HPB); and
- Four new structures (two per unit of HPC) to permanently house sluice gates and lifting beams used during outages (i.e. maintenance periods).

The health of an individual or a population is the result of a complex interaction of a wide range of different determinants of health, from an individual's genetic make-up, to lifestyles and behaviours, and the communities, local economy, built and natural environments to global ecosystem trends. All developments will have some effect on the determinants of health, which in turn will influence the health and wellbeing of the general population, vulnerable groups and individual people. Although assessing impacts on health beyond direct effects from for example emissions to air or road traffic incidents is complex, there is a need to ensure a proportionate assessment focused on an application's significant effects.

Having considered the submitted scoping report we wish to make the following specific comments:

- The proposed material changes are unlikely to result in an increase of fugitive dust emissions during the construction phase, provided that best practice and the Air Quality Management Plan (AQMP) are followed.
- The proposed changes should result in a reduction in operational emissions owing to the spent fuel now being stored in a dry state.
- We note that we last responded to the original DCO application on 12/01/2012. The proposed changes do not alter our previous response, and on this occasion, we have no additional comments to provide at this stage of the NSIP application.

On this occasion, we have no additional comments to provide at this stage of the NSIP application.

Yours sincerely

On behalf of UK Health Security Agency
nsipconsultations@phe.gov.uk

Please mark any correspondence for the attention of National Infrastructure Planning Administration.