The Examining Authority's Written Questions
Issued on 21 April 2021

Answers from the
Royal Society for the Protection of Birds
and Suffolk Wildlife Trust

Submitted for Deadline 2
2 June 2021

Planning Act 2008 (as amended)

In the matter of:

Application by NNB Generation Company (SZC) Limited for an Order Granting Development Consent for

The Sizewell C Project

Planning Inspectorate Ref: EN010012
RSPB Registration Identification Ref: 20026628
Suffolk Wildlife Trust Registration Identification Ref: 20026359

Examining Authority Questions - Part 1 OF 6
AR.1 Amenity and recreation

AR.1.12
The Applicant, ESC, SCC, National Trust, **the RSPB -** Displacement of Tourists/Visitors

The National Trust [RR-877] and RSPB [RR-1059] indicate that they do not consider the displacement of tourists and visitors from the current pattern of visiting has been undertaken in a way which could be regarded as precautionary, it could therefore underestimate the effects on both the National Trust land at Dunwich, and the RSPB Minsmere site but also elsewhere:
(i) Please respond to this concern.
(ii) The National Trust and RSPB are seeking a commitment to mitigation, monitoring of activity and potential compensation – please advise on any progress that has been made in this regard.

Answers from the RSPB – (i)

1. Our full comments on the Applicant's displacement calculations are provided in the report by Footprint Ecology "Review of Sizewell C application documents and evidence in relation to recreation impacts" (Liley and Saunders, 2020), which forms part of our Written Representations and can be found in the second report in Appendix 2 to that submission. The following points summarise the content of the section on "Predictions of changes in visitor use – Displaced visitors".

2. The estimates of additional visitor use within the Shadow HRA Recreational Disturbance Evidence Base[1] Table 3.5 contain errors in their calculations:
   - Those visitors who did not state a location to which they would be displaced are not accounted for in these figures. This calculation has since been updated for Eastbridge and Minsmere Outer in the paragraphs 8.3.5–10 of the Shadow HRA Report Addendum (AS-173)[2], as discussed in our Written Representations, but this has not been addressed for all sites.
   - Existing visitor numbers to each location appear to be estimated
   - The calculation of extra visits per year is based on the percentage of people who stated they would be displaced to a location applied to the number of people who already visit the location. This is incorrect and the percentage should be applied to the total number of people visiting locations further north around Sizewell (within and outside the Application site) from which some are likely to be displaced - the application of the percentage of all visitors being displaced to a location to the number of exiting visitors to that location does not make sense
   - It would therefore have been better to take the percentage of interviewees at each location where surveys were conducted that stated they would be displaced to different locations and then scale those figures up, based on the observation data at the relevant survey locations

3. We also have concerns about the assumptions made in the interpretation of the visitor data. Whilst we acknowledge that surveys are one of the few options available to gather information about likely displacement, the limitations of such surveys should be acknowledged. The Shadow HRA Recreational Disturbance Evidence Base paragraphs 3.2.5-3.2.12 does discuss potential differences between stated and actual behaviour, but only the potential for fewer visitors to be

[1] Shadow HRA Report Volume 1: Screening and Appropriate Assessment Part 4 Appendix 5.10E Annex A Recreational Disturbance Evidence Base (APP-148)
[2] Shadow HRA Report Addendum (AS-173)

displaced than stated, whereas the opposite could also occur. It is also possible that some survey respondents would not be able to adequately visualise the construction works (as no visual representation was given during the survey) and may be more likely to be displaced than they originally expected.

4. In conclusion, we therefore do not agree that the calculations of displaced visitors are precautionary, as the figures contain errors and the quality of the data around existing numbers of visitors is limited and hence calculations of visitor uplift are not reliable.

5. It should be noted that we also have concerns regarding the calculation of recreational visits by the construction workforce. These are covered in the report section "Predictions of changes in visitor use – visits from the construction workforce" (again in the second report in Appendix 2 to our Written Representations).

(ii)

1. One of our key concerns is the lack of detail around the proposals for mitigation and monitoring of impacts of increased recreational pressure. The Application documents variously refer to monitoring and mitigation of recreational pressure on designated sites through the Rights of Way and Access Strategy[3] and through a monitoring and mitigation plan. However, no detailed monitoring or mitigation proposals were presented for the Minsmere-Walberswick SPA, SAC and Ramsar site or the Sandlings SPA as part of the Application.

2. We note that there has been some progress with mitigation for the effects of the worker campus with a proposed contribution to the Suffolk Councils' Recreation Avoidance and Mitigation Strategy contained within Schedule 11 of the most recent iteration of the Draft Section 106 Agreement[4]. We also consider that provision of suitable alternative natural green space for additional residents during the construction period will be required.

3. We welcome the continued engagement of the Applicant with us and others in discussions around the development of a plan for monitoring and mitigation of recreational impacts on designated sites from recreational displacement. We understand that the Applicant intends to submit mitigation and monitoring plans for the relevant protected sites to the Examination at this or a subsequent deadline. We look forward to the opportunity to update our position on the impacts of recreational pressure on protected sites and species following submission and review of these plans.

Examining Authority Questions - Part 2 OF 6
Bio.1 Biodiversity and ecology, terrestrial and marine
Bio.1.74 - Natural England, ESC, **SWT, the RSPB**

[APP-224] – para 14.7.227, hydrology and the effect of the SSSI Crossing.
(a) Please will NE set out their view on what is said in this paragraph. Cross-referencing to NE's [RR-0878] and WR would be helpful, and to the SoCG.
b) Please will ESC, SWT and the RSPB also comment.

Neither the RSPB or SWT have particular expertise on this issue and would defer to Natural England and the Environment Agency with regard changes to hydrology.

[3] Volume 2 Main Development Site Chapter 15 Amenity and Recreation Appendices Appendix 15I Rights of Way and Access Strategy (APP-270)
[4] Draft s106 Agreement (REP1-007)

However, we refer to the report commissioned by Friends of the Earth and Suffolk Wildlife Trust titled 'A critical review of Sizewell C Co's site characterisation, impact assessment, and proposals for impact mitigation, in relation to risks posed to the ecohydrological integrity of Sizewell Marshes SSSI[5].', which illustrates the risk to the SSSI is largely due to changes in the balance between groundwater and surface water. Many of the rare species rely on high quality groundwater rising up through the peat. The proposals put forward may maintain water levels, but by replacing groundwater with lower quality surface water. It is important to note that these changes may be caused not only by the SSSI crossing but also by the footprint of the development itself.

Bio.1.71 - The Applicant, Natural England, **SWT**
[APP-224] – Deptford Pink. At para 14.7.220 it is concluded: "As the translocation is not guaranteed to be successful the impact of the population loss of Deptford Pink would constitute a moderate adverse effect, which is considered to be significant". What steps can be taken to improve the success of the translocation process? What is the success rate likely to be? Does NE agree with the assessment of the significance in this paragraph?

SWT have no particular expertise in relation to this species and therefore cannot answer meaningfully/in a way that will assist the ExA. We therefore defer to NE.

Bio.1.73 - Natural England, ESC, SCC, SWT
[APP-224] paras 14.7.222 – 223. Do you agree with the list of inter-relationship effects, mitigation and proposals in these paragraphs? Will there be significant effects arising from inter-relationships if the mitigation and proposals are implemented? What is ESC's view as the authority which will be enforcing the mitigation proposals?

Please note that APP-224 has been superseded by AS-033 (Terrestrial Ecology & Ornithology ES chapter) – but as far as we can tell the only change is the addition of some hyperlinks and therefore the text has remained the same.

1. We are grateful to Friends of the Earth and their Experts (Dr Rob Low, Dr David Mould and Jon Graham) for considering these issues in detail in their written representations. We refer the Examining Authority to those representations for full consideration of those issues. Below is just a summary to answer the question directed at SWT.

Assessment of the current hydrological functioning of Sizewell Marshes SSSI, which leads to the occurrence of favourable hydrological supporting conditions for M22

2. The ecohydrological analysis and conceptual model presented by EDF has failed to identify the controlling variables and mechanisms which directly control the variables defining the hydrological supporting conditions for the M22 community within Sizewell Marshes SSSI.

3. It may have been possible to identify the <u>actual</u>, rather than the 'likely' mechanisms which explain the expression of M22, and therefore to develop a more detailed and certain ecohydrological conceptual model.

4. Friends of the Earth's Experts view is that fully-screened shallow (c. 1 m deep) dipwells should have been installed in the Peat at the most notable stands of M22 (e.g., FM2 and FM3c, see Section 4.3), in order to allow assessment of the relative contribution of groundwater discharge as a water source at these points.

[5] Friends of the Earth and their Experts (Dr Rob Low, Dr David Mould and Jon Graham) written representations

5. The omission of a comprehensive surface water and shallow groundwater monitoring programme has prevented the development of a satisfactory conceptual understanding of the fine-scale ecohydrological dynamics of the system. Such an understanding was critical if an effective assessment of risk was to be developed.

6. The water table elevation in the Peat is never plotted in relation to the ground surface. This variable is very widely recognised as the most important in relation to defining hydrological supporting conditions for M22

7. The absence of rainfall data, which obviously represents a primary control on surface water and groundwater behaviour, will have compromised the analysis of all other hydrological responses at a fundamental level.

8. It is the view of Friends of the Earth's Experts that the hydro(geo)logical functioning of the shallow zone within Sizewell Marshes SSSI, which controls the variables which define the hydrological supporting conditions for the M22 fen-meadow, should have been monitored, analysed and characterised in much more detail, using a contemporary ecohydrological approach. From the available evidence Friends of the Earth's Experts conclude that direct, upwards groundwater flow and discharge, in response to the hydraulic gradient from the Crag to the Peat, is almost certainly a critical source of water to some of the stands of M22.

Assessment of the impacts on the current favourable hydrological supporting conditions for M22 posed by the proposed development

9. There are three major developments that have the potential to have a major impact on the sensitive ecohydrological functioning of the wetland system. These are:
    - The new cut-off wall adjacent to the platform base for the new site, and related internal lowering of groundwater levels (dewatering) during the construction phase;
    - The re-routing of the Sizewell Drain; and
    - The new crossing at the drainage outlet for the Sizewell Drain and the Leiston Drain.

Summary of impacts

10. Changes to the wetland system will have unknown impacts given the lack of understanding of how the system is operating at the fine scale, as noted in the section above. This is compounded by a lack of detail on the design of the three main critical developments.

11. A free span bridge would be far less impacting, as it would leave a significantly wider corridor unchanged, to facilitate original hydraulic control and subsurface drainage of the SSSI site.

12. Where the qualitative assessment concluded that a potential impact was not significant, further detailed analyses were not undertaken. This is a process failure, not following the precautionary principle, to account for potential errors in the qualitative assessment.

13. Paragraph 19.4.26 in APP-297 states that '*Groundwater levels within the Peat Deposits were noted to be highly responsive to temporary pumping during maintenance works at the Minsmere Sluice from October 2013 to February 2014 suggesting a high degree of connectivity between the surface water network and the Peat groundwater system*'. This high degree of connectivity fundamentally undermines the qualitative assessment, as it shows that changes to water levels in one part of the site will induce a change in other parts. As demonstrated below, the impacts of these changes are significant.

Regarding the design and application of the numerical model:

14. Projected drawdown could easily take the water table elevation outside of the optimal range for the summer water table, and therefore shows that the M22 community and key aquatic plants within the associated ditch system are significantly vulnerable to the projected drawdowns. This is not considered as anything more than a 'not significant' risk to the designated site, which is a major failing of the risk assessment process.

15. Consideration of only a doubling in hydraulic conductivity is unrealistically optimistic, and that the possibility that the overall hydraulic conductivity would be three- to five-times higher than designed should be assessed. If the directly proportional relationship between hydraulic conductivity of the cut-off wall and water table drawdown is assumed, this would give predicted drawdowns of the summer water table in the region of 30-50 cm; M22 is clearly extremely sensitive to this magnitude of drawdown (Section 4.2)

The absence of a monitoring and mitigation plan

16. It is important to note that a monitoring plan does not yet exist. The description of the proposed monitoring plan within the strategy document is insufficiently detailed.

17. In contrast the proposed in-field monitoring programme across the Sizewell Belts appears to have been poorly designed and not able to facilitate an appropriately detailed understanding of the hydrological dynamics of the wetland system.

18. Friends of the Earth's Experts' view, based on direct experience of work in a similar context at a large number of sites, that the implied assumption that the development of a hydro(geo)logical 'monitor and mitigate' plan with stakeholders will be relatively straightforward and to schedule is completely unrealistic. Development and agreement of the monitoring and mitigation plan, since it forms a part of the ecohydrological viability of the proposed development, should therefore be addressed at the earliest stage in the planning process.

19. UKTAG (2014) threshold for potential damage to a GWDTE and, assuming a reasonable distribution around the mean, indicates that surface water nitrate concentrations, including within Sizewell Marshes SSSI, are frequently above this threshold. Irrigation of the M22 fen-meadow vegetation with this water, i.e., the proposed mitigation, is therefore likely to cause further damage.

20. Paragraph 1.3.33 (Appendix 19E, APP-309) notes that '*the consented discharge from Leiston STW contains* higher *levels of nutrients (including phosphates) than the rest of the drainage system'*, and that '*in order to reduce the ingress of nutrients into the wider drainage network, SWT have attempted to reduce connectivity between Leiston Drain and the drainage network on either side (Sizewell Belts and Sizewell Marshes) via the use of flow regulating structures'*. It is of significant concern to note that the proposed mitigation strategy appears to reverse this established protective practice.

21. M22 is strongly associated with soligenous conditions[6] (see Section 4.2), and therefore fostering of more topogenous conditions[7] is completely inappropriate.

Summary and conclusions

22. Most stands of M22 are associated with permanent or intermittent seepages or where the water table is shallowly subsurface all year, sometimes peripheral to permanent seepages; this indicates a strong preference for soligenous wetness, where wet conditions are maintained by continuous incoming flow, rather than downstream (usually topographic) impoundment.

23. M22 is typically found in base-rich conditions over a wide range, but usually with a moderate level of fertility. Some of the least fertile sites were the most species-rich.

24. From the available evidence Friends of the Earth's Experts have concluded that direct, upwards groundwater flow and discharge, in response to the hydraulic gradient from the Crag to the Peat, is almost certainly a critical source of water to some of the stands of M22. It is critical because it allows favourable hydrological supporting conditions to be maintained, in terms of water table elevation regime and water quality, for these stands.
    - Prediction of the ecohydrological impacts of the proposed development must be informed by the best-possible ecohydrological conceptual model; as noted above, our view is that EDF's conceptual model is significantly flawed, and therefore that the prediction of impacts (including the design and use of the numerical model) has not been informed to the best possible degree.
    - Development and agreement of a detailed monitoring and mitigation plan, since it forms a part of the ecohydrological viability of the proposed development, should be addressed at the earliest stage in the planning process. The required contents of the plan, such as the scope of monitoring, data quality-checking procedures and reporting, detailed actions and timescales in relation to the loss of a monitoring point, periodic reporting requirements, and the requirements of the stakeholders which review the reports, all have long-term cost and logistical implications for the developer, and should be agreed before determination.
    - The primary measure for mitigation of ecohydrological impacts from the development appears to be that, if drawdown of the water table in the Peat within Sizewell Marshes is larger than predicted, water levels in the SSSI drainage ditch network will be raised, such that water migrates from the ditches into the Peat layers to maintain in-field water table elevations. This measure is fundamentally inappropriate, and would actually cause further damage to the M22 within the SSSI as follows:
        - The historical recorded nutrient concentrations within the ditch network indicate that the threshold value for potential damage of mesotrophic and fen-meadow fens within a GWDTE would frequently be exceeded. This is unsurprising as a significant percentage of incoming flow comes from the Leiston STW.
        - It appears to promote topogenous wet conditions, with associated hydro-chemical and hydro-physical implications, rather than the soligenous wet conditions usually favoured by M22.

[6] Soligenous wet conditions are maintained by more-or-less continuous incident water flows, for example, groundwater discharge to a seepage slope. Soligenous wetness is associated with a low potential for inundation, and relatively high dissolved oxygen concentrations.

[7] Wet conditions are described as topogenous if their primary cause is a downstream impediment to flow; this might be natural (e.g. the downstream lip of a basin in the topography) or artificial (e.g. a dam or earth bund). Topogenous wetness is generally associated with more potential for inundation, stagnation, and low dissolved oxygen and related hydrochemical effects.

25. **And in final summary**, it is Friends of the Earth's Experts view that EDF's understanding of the environmental processes which support M22 and associated communities within Sizewell Marshes SSSI is flawed, because up-to-date ecohydrological knowledge and techniques have not been applied. This has led to ill-informed impact prediction, which has resulted in the likelihood, magnitude and significance of potential impacts being significantly underestimated. These problems have been compounded by EDF's proposal of a mitigation technique which would actually cause further damage to the SSSI, rather than mitigating any unexpectedly large impacts.