Suffolk Coastal Friends of the Earth

Interested Party ID: 20025904

THE SIZEWELL C PROJECT

NNB Generation Co (SZC) Ltd

EN010012

Deadline 8: WRITTEN SUBMISSION OF ORAL CASE (ISH11) and EXPERT COMMENTS on ISH11

Authors

Dr David Mould, Dr Rob Low & Jonathan Graham

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Overview

This written submission provides a written summary on the oral submission at the Issue Specific Hearing 11 (ISH11), on Flooding, Water and Coastal Processes, which took place on 14th September 2021 and is broken down by technical issue.

Predominately we are responding to the Draft Water Monitoring Plan (PINS Reference REP7-075). Some of the responses repeat feedback from ISH10 that have yet to be addressed by the Applicant at the time of writing.

We also note the previously-stated flaws in the monitoring, as stated in our previous submissions (see SCFoE, 2021a; 2021b)), which have not been addressed. References are given using the PINS reference system where relevant.

Piezometric Levels vs. Water Table Elevation

We have highlighted extensively in our previous submissions (SCFoE, 2021a; 2021b) that hydrological supporting conditions for M22 (and wetland communities in general) are normally expressed in terms of water table elevation relative to ground surface, but that the Applicant has persisted in measuring and referring to the shallow piezometric groundwater level.

These are two potentially very different things, and there is a risk that the eco-hydrological impact assessment and, importantly in the current context, monitoring and proposed impact/adaptive mitigation and management, will be based on fundamentally the wrong variable.

We have previously asked for empirical comparison of water table elevation and piezometric levels within the Sizewell Marshes SSSI, so that the degree of difference in this context can be assessed, but this has not been provided. The Applicant maintains that it has been, and is, monitoring the water table elevation. However, the purpose of various types of water level monitoring installation is clear:

- Piezometers, as installed by the Applicant in Sizewell Marshes SSSI, facilitate measurement of piezometeric water levels. Piezometers, by definition, measure piezometric groundwater pressure, i.e., groundwater pressure over a specific depth interval below the ground surface. They do not allow measurement of water table elevation;
- Dipwells, which are fully perforated to the ground surface, facilitate measurement of water table elevation.

SZC Co's characterisation of a key part of the ecohydrology of the site has therefore been based on measurement and assessment of the wrong variable. We are of the opinion that if the Applicant cannot provide empirical evidence that the water level measured in their shallow piezometers is sufficiently similar to the water table elevation at each monitoring point, then both its eco-hydrological impact assessment and proposed water monitoring plan are seriously flawed.

A related point – one that illustrates that due to illustrating the Applicant not appreciating the importance of assessing water table elevation relative to the ground surface – is regards Plate 3.1 in the Draft Water Monitoring Plan (REP7-075). This shows multiple graphs with water levels expressed as metres above Ordnance Datum (maOD). However, the text says that it is included as a comparison to guideline regimes, which are expressed relative to the ground surface. However, the plate is completely useless for this purpose due to the presentation of the data.

This issue is compounded by the continuation of a poor density of monitoring points in the western end of the SSSI, which has significant ecological value. The Applicant has previously stated that this is to prevent damage to the habitat that monitoring (installation of wells and subsequent monitoring) may cause, but this demonstrates a lack of knowledge of the 'light-touch' water level monitoring techniques which are routinely used in wetlands with successful outcomes.

Micro-Topography.

In 3.1.7 of Draft Water Monitoring Plan (REP7-075), the Applicant highlights the 0.10 m micro-topographic variation, compared to the guideline 0.15 m water level range. This means that the micro-topographic level against which water levels are defined is critical. If a high point is chosen, water levels will appear relatively low, and *vice versa*. However, there is no indication as to which relative ground level has been chosen for each of the monitoring points, which is critical context. Potential bias in measuring location at installation points is also an issue.

This issue needs to be clarified within the forthcoming agreed Water Monitoring Plan. When the issue was raised during ISH11 the Applicant failed to address it and instead discussed ground-truthing LiDAR datasets with on-site measurements which is not relevant to this point.

Current vs. Guideline Water Table Regime.

The current water table regime within the SSSI, as determined by the Applicant, is outside the guideline regime stated in the scientific (and peer-reviewed) literature (notably Wheeler *et al.*, 2009), and as determined by collation of relevant data on a national basis. It must be assumed that a shift towards the guideline regime would result in improved quality of M22, as it has been determined for that habitat. In the planning system this would sometimes be referred to as 'betterment', particularly in the field of Flood Risk Assessment. Yet the setting of trigger levels in the Draft Water Monitoring Plan (REP7-075), based on historical data, has the effect of maintaining the sub-optimal regime, and not allowing for any improvement, either natural or through management.

It is our position that the updated Water Monitoring Plan should allow for betterment, using it as an opportunity for improving the SSSI condition (in relation to water level regime) to that of its notification[1]. The additional cost and effort would be negligible. Please can Suffolk Coastal Friends of the Earth be added to the list of parties involved with reviewing and developing the draft Water Monitoring Plan. Our expertise is relevant here.

Trigger levels.

Within Table 3.1 (pages 14-15 of REP7-075), the trigger levels are set at the 30th and 70th percentiles during the warmer months. On average, this means that water levels will be beyond trigger threshold levels for 60% of the time. It is our position that this an excessive degree of alert and control, with associated management overheads. The management regime is likely to fall to an

[1] As the Examining Authority has noted the Section 28G (Wildlife and Countryside Act 1981) Duty specifically requires the further of the conservation of SSSIs. "(2) The duty is to take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest." (emphasis added).

NGO-based organisation to manage. Please can these be reviewed in collaboration with all interested parties including those responsible for the site management.

Given the importance of the trigger levels to manage the SSSI habitat, we would expect that the monitoring system will be upgraded to a telemetered system such that alarms may be made automatically to allow an appropriately fast response to prevent damage. Without this, response times would be so slow and as such may not to be able to prevent damage to the habitat.

Please can we have units stated in Table 3.1 on REP7-075.

Water Quality

The proposed monitoring frequency (six-monthly) is woefully inadequate to highlight any issues and allow adequate action and in no way takes account of the fragility of the important ground water dependent plant communities of the SSSI and their sensitivity to even subtle changes in water chemistry.

Environment Agency (2008) guidance to water companies for self-monitoring in connection with environmental permits is either 12 or 24 samples per year and the Agency's own monitoring for water courses is typically monthly. Monthly monitoring for a period greater than one year is therefore of critical importance in understanding seasonal variation in nutrient loadings. Monitoring also needs to be based on standard laboratory assessment of water samples including assessment of key nutrients such as total phosphorus and total oxidised nitrogen (TON) and not rely on field assessments of nutrient loading based on either Oxidation Reduction Potential (ORP) or Ammonium (NH_4^+) which are unsatisfactory. As one of the largest planning applications in the UK, Sizewell C should at least conform to this standard level of rigour for water quality monitoring.

This issue is especially important given the expected change in supply mechanisms to increase the proportion of surface water and decrease in groundwater supply.

The ISH11 response by the Applicant's consultant (Atkins) suggested that there would be no change in water supply mechanism to the SSSI area. This is not considered to be assured given our knowledge of the Application including the structural changes made to the drainage of the immediate areas, including the SSSI crossing, diversion of the Sizewell Drain and installation of the cut-off wall. These are significant developments that each have a large risk of changing the dynamics of the wetland's delicate hydrological system that is currently a fine balance of surface water and groundwater supply.

It is worth noting that the Applicant's standard insistence that there will be no change to the water supply mechanisms to the SSSI fails to address our concerns:

- The Applicant's groundwater modelling suggests a lowering of piezometric level in the underlying Crag and therefore, potentially, a reduction in discharge of groundwater to the overlying SSSI.
- Should this be the case, the Applicant's proposal is to manage water levels within the ditch system such that water table elevations within the SSSI are maintained at the pre-construction regime.

- In terms of water supply to the terrestrial areas of the SSSI, this would be; 1) a reduction in groundwater supply, and 2) an increase in supply from the nutrient-rich ditches. The latter is known to be potentially damaging to the M22 community.

We have repeatedly made these points in previous submissions, and the Applicant has repeatedly failed to address them.

Summary

As with previous submissions, we are independent ecohydrological experts, and endeavour to provide a balanced critique the Application and the Applicant's further submissions within our submissions.

We state clearly that the points raised above are not a matter of detail but fundamental failures on the eco-hydrological understanding of critical protected areas. The notification of a SSSI is not undertaken lightly and it demands appropriate protection. Competent monitoring and development of appropriate trigger levels are not technically challenging to deliver. We are happy and keen to provide further support to the Applicant and its consultants.

References

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