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for people and wildlife

Environment Agency

Wendy McKay

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cc. [redacted]

Our Ref: 20026727

Your Ref: EN010012

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By email only

Dear Ms McKay

Planning Act 2008 – Section 88 and the Infrastructure Planning (Examination Procedure) Rules 2010 – Deadline 8: Comments on Coastal Geomorphology Reports

Application by NNB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C Project

For Deadline 8 (24th September) the Examining Authority (ExA) have requested comments on additional reports submitted up to NNBGenCo (SzC) Ltd Deadline 7. We wish to provide feedback on the following reports:

- [REP7-045] SZC Bk9 9.31A Storm Erosion Modelling of the SZC SCDF using Xbeach-2D and Xbeach-G TR545
- [REP7-101] SZC Bk9 9.12(B) Preliminary Design and Maintenance Requirements for the SZC SCDF TR544

Yours sincerely

[redacted]

Simon Barlow
Project Manager
Sizewell C Nuclear New Build
Environment Agency

[redacted]

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Appendix A: Environment Agency comments on Coastal Geomorphology Reports

Reference	Issue	Impact	Solution
SZC Bk9 9.31A Storm Erosion Modelling of the SZC SCDF using Xbeach-2D and Xbeach-G			
2.2.2	The additional modelling to extend the assessment out to the end of decommissioning in 2140 includes more severe SLR scenarios (RCP8.5 + adapted HCDF design) but uses the same storm scenarios as Edition 1 and therefore does not consider more severe (lower probability) conditions	We have previously expressed an expectation that Edition 2 of this report would consider more severe storm and SLR conditions to reflect the extended duration of the timescale involved. This edition does partially extend the assessments to 2140, but further work is still required to complete the full assessment of reasonable worst case scenarios.	It is our understanding that further work will be provided modelling the Beast from the East sequence to 2140, as well as the more severe 1 in 10,000 yr safety case scenario. We welcome this, and look forward to the opportunity to review these materials.
2.5.2 (Table 2-5 and 2-6)	It is not immediately clear how the SLR correction figures added to the projections beyond 2099 were derived		Clarify origin of SLR correction figures when extending UKCP18 projections beyond 2099
3.4.2	Volumetric losses for the 1:20 NE storm, RCP8.5 2140 SLR with future eroded shorelines scenario suggests increased risk of HCDF exposure in the event of two or more events occurring in quick succession.	This report does not include assessment (whether modelled or via expert judgement) of the likelihood of HCDF exposure due to multiple severe events occurring in close proximity (and thus preventing immediate mitigation or natural recovery) and the impacts that this may have on the shoreline. This is particularly relevant given increased recognition of the threat posed by storm clustering, in combination with SLR.	The next edition of the report should provide assessment of the potential risks and impacts associated with storm clustering, and particularly the effects that HCDF exposure may have on the shore, or if this is not considered a plausible scenario during the lifetime of the station, detailed explanation should be given to support this rationale.

4.3.2	This section states that '*erosion volumes are likely to be at least 3 times lower if medium or very coarse pebbles are used, and could be an order of magnitude lower if the SCDF were constructed from cobbles*' and '*increasing particle size plays an important role in reducing both erosion demand and wave runup, meaning that far more effective coastal protection can be provided by the SCDF if it is composed of pebbles or fine cobbles, compared to sand*.' The second of these lines is potentially misleading since it does not account for the impacts a cobble SCDF may have on wider morphodynamics (i.e. the potential for detrimental impacts on the adjacent sections of coast compared with an SCDF composed of native sediment sizes).	Whilst we recognise that this is intended as a sensitivity test and not a design recommendation, it nevertheless bares reiterating that constructing the SCDF out of cobbles would very likely result in a change from the natural geomorphology of the frontage, and quite possibly therefore also detrimental environmental impacts.	It should be made clear that this is a sensitivity test and not a design recommendation at this stage. The final design will need to consider environmental and geomorphological impacts in addition to engineering requirements.
5	The conclusions state that '*Large particles therefore provide multiple benefits to the long-term resilience of the SCDF, but further numerical modelling or, ideally, full scale physical modelling is recommended to provide a better understanding of the potential benefit of increasing SCDF particle size within the coarse end of the naturally occurring grain size spectrum.*'	The requirement for additional assessment of environmental and geomorphological impacts of using different particle sizes is missing from this text.	Add text (in the next iteration of this report) outlining the need for assessment of the environmental and geomorphological effects of using different particle size compositions in the SCDF design.
SZC Bk9 9.12(B) Preliminary Design and Maintenance Requirements for the SZC SCDF			
Executive Summary and Conclusion	*The area of maximum loss still contained 99 m3/m of sediment seaward of the HCDF (compared to a starting volume of ~240 m3/m), although under such conditions immediate recharge would be needed to avoid HCDF exposure by subsequent more moderate storms. However, the likelihood of a recurrence of such an event without an opportunity to recharge makes this an unlikely worst-case occurrence.'*	Whilst we accept that the conditions required for such levels of erosion may reasonably be considered as unlikely, we are concerned that the possibility for storm clustering, which is increasingly recognised as a threat to natural beach recovery and timely repair of assets, may be underestimated here, and is perhaps therefore less unlikely.	Provide further analysis of the threat posed by storm clustering, particularly under the RCP8.5 SLR and adapted HCDF design scenario.

5	*Version 1 of this report proposed the use of very coarse pebbles (with a relatively low sand content), amounting to beach coarsening within the native particle size distribution, which is in line with UK experience and best practice guidance (Rogers et al., 2010), and intentionally designed to increase shingle retention and therefore prolong longevity'*	We understand that there is general acceptance that an SCDF composed of sediment which matches the natural grading at the site will still provide the necessary protection, which we welcome. There remain concerns that a significant coarsening - even if still within the native distribution - could result in geomorphological and environmental impacts.	Further work is necessary to determine the optimum particle size distribution for the SCDF. We suggest that it should be made clear that this will encompass geomorphological and environmental considerations, alongside engineering requirements.
5	*As the Sizewell C project has a relatively long timeline, changes in future coastal processes have been factored into future RI estimates by way of modelling two sea level cases (throughout the operational and decommissioning phases) and potential severe erosion of the adjacent shorelines. In doing so, future viability has been tested and proven to the end of the decommissioning phase.'*	It is important to note that viability has at this time only been demonstrated for a limited range of scenarios. The ultimate viability of the SCDF will depend on the outcomes of additional modelling and assessment work, including in particular modelling the effects of more severe storm scenarios out to 2140.	No action required at this point. The point is raised to avoid any ambiguity relating to the declaration in this edition that future viability to the end of decommissioning is proven, when further work is in fact still required before this can be agreed.