Together Against Sizewell C

Comments on consultation of Temporary Desalination Plant Water Supply Strategy Update [Examination Library Ref. AS-202, ES Addendum Appendix 2.2D].

IP no. 20026424

24th August 2021

As set out in Together Against Sizewell C's (TASC) Written Representations and other DCO submissions, TASC are opposed to the construction of a new nuclear plant at Sizewell. SZC will do little to address the climate crisis and the need to decarbonise the economy. Abandoning the SZC plans would render the need for a desalination plant, along with the 12+ years of environmental disturbance and destruction, redundant. However, TASC recognises that the planning inquiry is a legal requirement for such a proposal, no matter how inappropriate, and therefore makes the following comments and poses the following questions to the Applicant.

1. In January 2021, EdF published document 6.14, an Environmental Statement Addendum[1]. At Appendix 2.2.D to that document, at Table 1.2 on page 11, the Applicant states, in reference to *"Desalination: Installing modular desalination plant on the main development site and abstracting seawater for treatment"*:

   "This option has been discounted in favour of alternative options, due to concerns with power consumption, sustainability, cost, and wastewater discharge. The desalination process is typically energy intensive, and the discharge of brine water as a result of desalination may not be suitable for discharge through the combined drainage outfall (CDO)."

   Could the Applicant explain why there is now a proposal for the very technology it had previously discounted?

   Can the Applicant explain what has changed in respect of its assessment regarding the adverse impacts of desalination of seawater and why it now claims that the discharge of brine is acceptable?

   Will the Applicant publish the original assessment of the impact of desalination which supported its view in January 2021?

2. TASC makes the general point that East Anglia is identified as a 'water scarce' area and therefore the long-term, secure provision of large volumes of potable water for

[1] https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-003013-SZC_Bk6_6.14_ESAdd_V3_Ch2_Appx2.2.A_D_DoD.pdf

infrastructure projects such as SZC cannot be guaranteed and will inevitably have consequences for the availability of potable water to meet existing and predicted domestic, agricultural and business demand.

3. Anglian Water has commented that East Anglia could face a water shortfall of 30 Ml/day by 2025 and points out that 175,000 new homes are 'set to be built across what is the driest region in the country'.[2] To sanction the construction of such a large and water-intense project as SZC which will create a heavy burden on already stretched water supplies over such a long period of time would appear to be at best questionable and at worst reckless.

4. TASC believes that the timing, quality and detail of information and the truncated period of time allowed for consultation in respect of this proposed change to the DCO are disappointing, in that the timing is far too late in the process, the level of information detail is poor and the time allowed for consultation on such an 11th hour but significant and major addition to the DCO once again puts objectors to the development of SZC at a considerable disadvantage.

5. EdF has known for at least a decade that its proposed SZC development would require a vast volume of potable water every day during construction and during operation of the plant. Why has EdF taken so long to announce that it has still not resolved the water strategy issue after many local organisations, including TASC, have been pointing out this absence for over ten years, as shown by a newspaper article from 2010?[3] Is EdF deliberately elongating the DCO process to ensure it has enough time to patch up its documentation to cover its many deficiencies or is hoping to hide this issue in the Rochdale envelope to avoid proper scrutiny? To be so deeply into the DCO process without having a workable potable water strategy is insulting to the inspectorate and to the people of East Suffolk and its district and county councils.

6. What exactly is the definition of an acceptable water 'strategy'? If it is, as widely accepted, 'a plan to achieve an overall aim' to provide the site with an adequate sustainable water supply, then why has it taken EdF so long to recognise that it needed to finalise a strategy and that the one it has arrived at is, at best, an environmentally burdensome stop-gap to buy more time to finalise a plan it should have put to the suppliers, the inspectors, the regulators and to the people of East Suffolk a long time ago?

7. When did EdF finally accept that the potable water demand could not be supplied by the sources it had assumed would provide it after it had been developing its planning application for a decade or more and after the EA had requested the Applicant's final water supply strategy for several years?

8. At 2.2.4, it is stated that ESW were commissioned to undertake two tasks which can be summarised as:

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[2] EADT 12/8/21 https://www.eadt.co.uk/news/business/work-begins-on-anglian-water-pipeline-to-east-8125496

3 Beccles & Bungay Article https://www.becclesandbungayjournal.co.uk/news/sizewell-c-threat-to-water-supplies-1871084

- to confirm that the supply from the Northern/Central WRZ was sustainable and,
- to develop an implementation plan for the transfer main.

We then read that interim feedback on the first task indicated, in June 2021, that the SZC demand 'is likely to be sustainable, subject to agreement with the environment Agency and Natural England' and that the transfer main 'may not be fully available until 2026 or later…'

9. We can only conclude from these caveated responses that there is no certainty at all about the sustainability of the volume of supply the Applicant require to construct and operate SZC and that the interim arrangement of a desalination plant must meet the potable water demand for at least 4 years (assuming construction starts in 2022) but possibly for a much longer period of time before the transfer main is in place, all assuming, of course, that the level of demand is, indeed, considered sustainable. If the ESW study shows that the required supply in not sustainable, either the development cannot go ahead, or the 'temporary' desalination plant will become permanent for at least the 12 year duration of the construction period or even indefinitely.

10. Indeed, the incentive to install a permanent desalination plant is given credence by the Electricity Sector of the CCC 6th Carbon Budget[4] (page 32) which states: *'Freshwater could become scarcer in the future, depending on the level of climate change that takes place. Our scenarios suggest that water could be saved as we transition from a generation mix reliant on nuclear and fossil generation that require water for cooling. Nonetheless, the uptake of electrolysers could increase overall demand for water. Our scenarios indicate a 10% decrease in water use by 2050, including water use for electrolysis. This is contingent on new nuclear capacity using sea water over freshwater. If this were not the case, water use could increase by 20%.'*

11. Does EdF therefore contemplate the temporary desalination plant becoming a permanent feature or will it withdraw its DCO application should the ESW study indicate that the potable water demand over the construction, operational and decommissioning periods is not sustainable in the short, medium or long term, given the water-scarce nature of East Suffolk and predictions for more severe climate change impacts over coming decades and the unpredictability of rainfall?

12. The proposed provision of a 28km new high pressure water mains with associated infrastructure begs many questions:

    - How long will the securing of deeds of easement and permissions for the required infrastructure and construction take?
    - What provisions have been made to engage communities along the route of the pipeline to seek their views on such a development?
    - What will be the cost (additional to the £20+bn cost of the plant itself)?
    - What CO2 burden will its construction and operation add to the 6.2m tonnes previously estimated (now estimated as 3.8m tonnes) to be generated by the plant's construction?

[4] https://www.theccc.org.uk/publication/sixth-carbon-budget/

[redacted]

13. The transfer mains 'may not be fully available until 2026 or later'. If it is partially available – a condition that seems possible given the choice of words used – what impact would this have on the need for a desalination plant, its seawater throughput, environmental damage profile and the length of time it would be needed?

14. TASC does not give credibility to the claim that ESW has only recently told EdF that balancing water demands between WRZs using existing networks with no net increase in abstraction within the Blyth WRZ was possible. EdF should provide written evidence to substantiate such a claim.

15. Reference paragraphs 2.2.9 & 2.2.10,

    i) What steps does EdF intend to carry out to collect and store rainwater to supplement its potable water requirement?

    ii) What is the source of non-potable water to be used for dust suppression, vehicle washing and wheel washing? TASC are concerned that run-off of contaminated/salty water will have adverse impacts on the groundwater and the flora and fauna dependent on high quality groundwater, especially as the plant will be situated near many designated areas.

    iii) What volume of water will need to be stored on site due to the desalination activities?

    iv) Paragraph 2.2.10 expresses percentage reductions in potable water but these are meaningless without knowing the quantities involved: please provide the relevant quantities.

16. TASC are concerned that the desalination plant would not be removed after four years (2.3.4) and that the Applicant, once having incurred the cost of installing the desalination plant, will attempt to avoid the costs associated with the new transfer main by making yet another application for change to keep the desalination plant permanently. What legally binding agreements are proposed to avoid this happening?

17. When was figure 2.2 (Likely water demand profile during the construction period) constructed: for how long has EdF known about this demand profile?

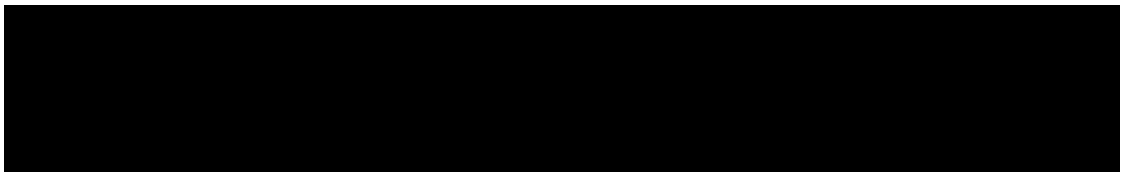
18. Why does the projected demand line on figure 2.2 stop at month 127 when all the evidence points to a construction period of at least twelve years, i.e. to 144 months, and possibly well beyond the 12 year period?

19. At 2.3.2, the consultation document states that, 'desalination is the process of removing salt and other minerals from seawater.' What other minerals will the process remove, apart from salt?

20. Regarding 2.3.3, what protections are proposed for the Applicant to be so confident to state that "the desalination and seawater treatment process will also not impact or interact with groundwater or surface water"?

21. What comprises the non-salt or mineral solids which would require a one HGV-load to be taken off site per day at peak desalination?

22. What is EdF's estimation of additional annual fish and other marine biota entrainment, impingement and death caused by the desalination of seawater from the proposed plant?



23. The consultation document claims that, 'The relatively low abstraction rates (equivalent to less than 0.09% of the proposed cooling water abstraction once operational) coupled with the intake mitigation would result in negligible losses of fish and invertebrates.' What is meant by 'negligible'?

24. While the abstraction rate is quoted as <1% of the nuclear plant's cooling water intake (2.4.15), that still means that 10 million litres a day will pass through the desalination plant's system.

25. How will EdF ensure that the radioactive contamination caused by the discharges from SZB will be removed from the water along with salt and 'other minerals'?

26. Will the resulting brine generated for disposal contain this radioactive matter?

27. EdF should give evidence for its claim that the seawater processing will not impact or interact with groundwater or surface water. It is clear that the creation of brine and the need to dispose of it will have some sort of environmental impact. EdF should explain how and where this waste product will be dealt with and what environmental consequences will result.

28. Could EdF confirm or deny that the desalination plant and associated onshore equipment will include an effluent stack?

29. If an effluent stack is part of the onshore infrastructure, please advise what materials the gaseous effluent will contain.

30. EdF claim that the slurry created by the desalination process is non-hazardous requiring off-site disposal. Please confirm:

    - that gaseous emissions which include carbon monoxide (CO), nitric oxide (NO), nitrogen dioxide (NO2), and sulphur dioxide (SO2) would not be created as part of the process, or, if no such assurance can be given;
    - how these emissions will be controlled;
    - that ground water and aquifers would not be harmed by the process and its effluent.

31. 2.4.2 indicates that a number of media have been excluded from further assessment in respect of the impact of the proposed change due to the 'sealed nature of the process'. These excluded media include ground and surface water and flood risk. TASC disagrees with the justification of these exclusions insofar as it is TASC's understanding that chemical, biological, or mineral contaminants used in the desalination process can alter groundwater supplies with the potential to affect crop growth and water quality. The desalination process must be constantly monitored to protect the water supply. Flood risk is also of concern should the site be subject to inundation.

32. TASC also draws attention to the possibility that the intake water, drawn from a water body known to be contaminated with tritiated water, trace elements of heavy metals, chemicals and radioactive material discharged from the EdF 'B' and notional 'C' and 'D' plants, could present problems.

33. We therefore request that EdF respond to the following questions:

    - What impacts does EdF predict in terms of the contamination of groundwater supplies?

[redacted]

- What monitoring processes are planned to measure the quality of the intake and output water?
- Does EdF have a clear understanding of the levels of organic and sedimentary particulates in the water body? If so, please publish those levels and identify and quantify the materials present.

34. It claims (at 2.4.9) that 90 – 99% of the 'loading of most of the substances present in the 40% abstracted seawater would be discharged back to sea as a brine concentrate' but at approximately 1.6 times more salt concentration than seawater. Could the Applicant explain this statement and identify what would comprise the 'loading' and the 'substances' in both the abstracted seawater and the discharged concentrate?

35. 6Ml of effluent brine water will be discharged a day (2.3.26). How much salt will this contain by weight, over what area of seabed is it expected to be deposited and with what impact on marine flora and fauna?

36. Phosphorous can cause algal blooms. How will the Applicant avoid such a consequence?

37. How much material will need to be dredged?

38. How would the discharge affect bathing water quality in the immediate area of the outfall and in what radius of the outfall would quality be impaired for bathing safety?

39. The consultation document claims that the proposed change would not alter the impacts of the proposed development with regard to (interalia) climate change and radiological effects. TASC disagrees with this statement and asks EdF to justify such a claim.

40. 'Changes in suspended sediments associated with these activities (installation of intake heads and diffuser outfall) are anticipated to be comparable to previous assessments in the Environmental Statement which were predicted to be short-lived and not significant for water quality relative to natural variation.' On what grounds does EdF make such a claim and what would the consequences be in such anticipation was shown to be wrong?

41. 2.4.11is an interesting paragraph: 'The brine discharge from the desalination process would contain higher concentrations of naturally occurring metals and trace elements present in natural seawater. A preliminary H1 screening assessment indicates that the small volume discharge may **exceed screening thresholds for zinc and chromium**. Any such effect is **likely to be limited** close to the point of discharge due to rapid mixing. The discharge rate and the magnitude of the zinc and chromium concentrations for the desalination concentrate are similar to those for assessments made for other construction discharges which were assessed as not significant. **More detailed modelling will be undertaken as part of a H1 type assessment to confirm effects on marine water quality.'** (emphases added).

42. By how much does EdF estimate that the screening thresholds for zinc and chromium may be exceeded? What degree of likelihood does EdF ascribe to the limiting of effects of such exceeding of thresholds close to the point of discharge and should not the 'more detailed modelling to confirm effects on marine water quality' be carried out before the development is considered for approval rather than after the event?

43. What would be the consequences of such dredging in respect of re-suspending radioactive, chemical and heavy metal contaminants into the water body and/or into the atmosphere through sea spray aerosols?

[redacted]

44. What impact would the desalination plant have on noise levels locally during construction and operation?

45. What would be the number of HGVs required to bring to the site the requisite materials for the construction and the requisite number of vehicles to remove effluent 'off site'?

46. Is EdF aware that particles are notable concentrators of anthropogenic radioactivity via bioaccumulation or absorption and are likely to be constituents of the effluent stream along with the brine? If so, does EdF intend to pre-treat intake water to remove contaminants, what removal processes will be used and how will contaminated residue be managed?

47. 2.4.6 says: 'The ES has already recognised uncertainty regarding the resilience of the bar and beach morphology to multiple minor disturbances. The additional effects of the proposed headworks, which are relatively small structures, are therefore **likely** to be comparable to previous assessments.' (emphasis added). What measure of 'likeliness' does EdF ascribe to the effects of the proposed headworks?

48. The discharge from the desalination plant would consist of, '…concentrated saline water, increased concentrations of naturally occurring metals as well as added phosphorus and a preliminary H1 screening assessment of the proposed discharges indicates that the small volume discharge may exceed screening thresholds for zinc and chromium'. No mention is made of radioactive particulates. EdF should explain how these will be removed from the discharge.

49. 'A full assessment will consider the magnitude of saline, trace metal and nutrient discharges in relation to the sensitivity of marine ecology receptors.' Why is this couched in the future tense? Surely, such an assessment should be conducted now and put before consultees as well as the regulators and the inspectors to allow a comprehensive judgement rather than one based on a future piece of work whose outcome cannot be known at this stage.

50. The Applicant has stated that there will be no need to increase the number of HGVs as a result of this proposed change even though there will be a considerable number of tanker journeys as well as those for delivery of materials. The implication is that this will cause a delay in the overall SZC project. What is the quantum of the delay anticipated?

[redacted]

Pete Wilkinson

Chairman TASC

24 August 2021

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