EN010012 Comment on the Secretary of State's consultation letter dated 25.04.2022

Application by NNB Generation Company (SZC) Limited for an Order Granting Development Consent for the Sizewell C New Nuclear Power Station

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Content

S.3.1 Equality of arms

S.3.1.1 Lack of requisite resource capacity continues to hamper significantly ability to give proper consideration to the full set of documentation obtained by the Secretary of State under post-Examination procedures. As an unresourced Lay IP, engagement on in-depth issues has proven very limited and partial during the one-month time limit allowed under the Secretary of State's Letter of 25.04.2022. There exists an added disadvantage. Namely, lack of access to on-call requisite expertise as well. The tally of new additional (some voluminous) documentation accumulated by the Secretary of State to date stands at 68.

S.3.1.2 Moreover, it is highly unsatisfactory that the PINS webpage on Sizewell C should lack an obvious full-text search tool to enable direct content interrogation of all post-Examination documents. Access to such functionality is crucial for facilitating ready location of any response on any particular issue in all documents under the webpage. Preclusion is not without further consequential disadvantage for unresourced Lay IPs.

S.3.2 Introduction: transboundary consultation issues

S.3.2.1 The following observations are restricted to three transboundary consultation issues arising specifically under Annexe B of the Secretary of State's Consultation Letter dated 25.04.2022.

S.3.3 Annex B of the Secretary of State's Consultation Letter dated 25.04.2022

Section 5: BEIS reply to Questions from the Government of Austria

S.3.3.1 Status of a UK Geological Disposal Facility (GDF)

S.3.3.1.1 **BEIS response to 8.1 Question 2 - What is the status of the geological repository for spent fuel and HLW [high level waste]?**

According to BEIS at paragraph 5.2.7:

> "…three potential sites for the geological disposal facility have been identified, with local working groups set up."

However, in the interest of clarity, it warrants noting that the local working groups are still at early stage conversations. The unvarnished reality behind the BEIS gloss being that no initial geological survey has commenced at any site. There is still a long way to go before even initial surface, let alone underground, geological data for any potential site becomes available[1]. So, the question remains: what substantive change has there been in the status of a GDF in the UK?

S.3.3.1.2 **No substantive change in GDF status since the 1950's**

S.3.3.1.2.1 Effectively no substantive progress has been made by the UK Government since October 1950 when the Windscale Pile 1 Reactor commenced operations, followed subsequently by substantial annual generation of spent nuclear fuel and high level radioactive waste under

[1] see, for example, section 4 in the joint Environment Agency and Office for Nuclear Regulation Corporate Report, as updated 10 May 2022: Scrutiny of RWM's work on geological disposal – annual report 2020 to 2021. Available at: https://www.gov.uk/government/publications/geological-disposal-scrutiny-of-rwms-work-annual-reports/scrutiny-of-rwms-work-on-geological-disposal-annual-report-2020-to-2021

successor Magnox, Advanced Gas Cooled Reactor and the Pressurised Water Reactor programmes.

- The collection of geologic test bore samples from locations across the UK (by scientists from the Institute of Geological Sciences) were abandoned part way through the survey programme in the 1980's in the wake of significant local public resistance.

- On 17 March 1997, a Planning Inquiry Inspector rejected a proposal from NIREX (one of the predecessors of the current Nuclear Waste Services Limited) for a Rock Characterisation Facility at Langland Farm (near Sellafield) for a potential GDF. As it turned out, Nirex demonstrated poor understanding of site geology and hydrology.

At present, a firm timetable for a fully functioning Rock Characterisation Facility anywhere in the UK simply does not exist.

S.3.3.1.2.2 It further warrants noting that, to all intents and purposes, the UK Government has made virtually no substantive progress since the publication of the Sixth Report of the Royal Commission on Environmental Pollution (RCEP) in 1976. According to the RCEP Recommendation 27[2]:

> "'There should be no commitment to a large programme of nuclear fission power until it has been demonstrated beyond reasonable doubt that a method exists to ensure the safe containment of long-lived highly radioactive waste for the indefinite future.'"

The RCEP conditional test in Recommendation 27 (namely, demonstration of safe containment beyond reasonable doubt for the indefinite future) was discussed in REP10-295 (under section D10.2.1). That there exists no defensible justification for new additional radioactive waste production under the proposed Sizewell C project would appear consistent with the 1976 RCEP Recommendation 27. Successive UK Governments have all failed to demonstrate the safe containment of radioactive waste, beyond reasonable doubt for the indefinite future, under prevailing geologic conditions in the UK.

S.3.3.1.2.3 In other words, the current proposal for new additional radioactive waste generation by Sizewell C evidently unquestionably fails compliance with the 1976 RCEP Recommendation 27.

S.3.3.1.2.4 Concern over continuing absence of a GDF in the face of prevailing push for substantial revival of nuclear power has also been noted in a Letter published in *The Times* newspaper in September 2020[3], by a former Chief Inspector of the Nuclear Installations Inspectorate (a predecessor of the current Office for Nuclear Regulation).

S.3.3.1.3 Significant material change in radioactive waste status since the 1950's

S.3.3.1.3.1 On the other hand, as if locked in systemic institutional denial of the 1976 RCEP Recommendation 27, successive Governments have continued (and, propose to continue) to encourage, facilitate and preside over serial annual significant additional accumulations of high level radioactive waste, intermediate level radioactive waste and spent nuclear fuel. Held in surface storage facilities at multiple sites across the UK, Governments have approved all such accumulation without interruption since the 1950's.

S.3.3.1.3.2 According to the latest energy strategy, the current administration aspires to build 8 new nuclear power stations (up to 24GW total capacity) by 2050, at the rate of one reactor a

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[2] RCEP (1976) Nuclear Power and the Environment. Royal Commission on Environmental Pollution, Chairman Sir Brian Flowers. Sixth Report. Cmnd 6618. HMSO.

[3] Duncan, Dr Allan (2020) Letter to the Editor, *The Times* 19 September 2020.

year[4]. Other than a bland statement on page 20, the Government displays scant cognisance of the escalating generation and accumulation of ever larger inventories of spent nuclear fuel and other radioactive waste, in the face of complete absence of any environmentally safe proven permanent GDF anywhere in the UK. There exists not even a candidate site for an initial rock characterisation facility.

S.3.3.1.4 A real answer to the Government of Austria's 8.1 Question 2?

S.3.3.1.4.1 So, might a real answer be that actualising a UK GDF remains perpetually an open ended proposition?

- In BEIS parlance, "dry storage of spent nuclear fuel on-site at the Sizewell C site until such time as a UK GDF becomes available" could also mean surface storage for ever, in light of the Government's 72-year track record to date.
- Continuation of generation and stockpiling of radioactive waste from the proposed Sizewell C nuclear power station, in the face of prevailing unavailability of an RCEP compliant GDF, means deliberately shunting off the nuclear waste disposal problems to future generations.
- The Government appears to have no qualms on inflating the existing large stockpiled nuclear waste inventories, long awaiting permanent disposal in an unknown GDF at an unknown location at an uncertain future date.

S.3.3.2 Geologic degradation of UK spent fuel and high level radioactive waste canisters

BEIS response to 8.1 Question 4 - Is it planned to use copper for the spent fuel canisters, and if yes, how will the copper corrosion problem be solved?

S.3.3.2.1 In the first instance, according to BEIS at paragraph 5.2.11:

> "For Sizewell C, fuel assemblies removed from the reactor would be cooled underwater in the fuel building fuel pool for around 10 years during operation; and 3 years at end of generation."

Surprisingly, the BEIS response fails to acknowledge radiological considerations bearing on early handling, removal, and treatment (drying) of spent nuclear fuel after only 3 years of underwater cooling (at end of generation: in contrast to default 10 years' underwater cooling). Does this mean the highly radioactive and high heat generating spent fuel would be transferred straight away into multi-purpose canisters (MPCs), which would then be sealed and transhipped to an Interim Spent Fuel Storage (ISFS) facility?

Plainly, activity levels and heat generation by spent fuel cooled underwater for only 3 years differ significantly from the activity levels and heat generation by fuel cooled underwater for a default period of 10 years.

a. Is it proposed to intern the 3-year water cooled spent fuel together with the 10-year water cooled spent fuel, in the same on-site ISFS? How would elevated activity levels and heat generation be managed safely inside such ISFS?

b. Might the 3-year water cooled fuel tranche impinge eventually on emplacement geometry in the host GDF?

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[4] See page 21 in: British Energy Security Strategy. Secure, clean and affordable British energy for the long term. HM Government. April 2022. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1069973/british-energy-security-strategy-print-ready.pdf

Remarkably, these issues are missing from para.5.2.11 in the Main Report[5] prepared by the Applicant in Response to the SoS's information request of 18 March 2022.

S.3.3.2.2 Regarding the risk of environmental degradation germane to the integrity of buried UK spent fuel and HLW canisters, within the confines of a geologic repository, BEIS state at paragraph 5.2.15 merely that:

> "The MPC and HI-Storm are constructed of a Neutron Absorber, Concrete and Stainless Steel and as such are not copper based."

This pithy response is rendered unintelligible through failure to address properly salient issues concerning the geochemical performance of stainless steel fabricated MPCs. What physical and geochemical properties have been determined to favour the use of stainless steel over copper?

S.3.3.3 Accident analysis: WENRA 2019 and the proposed Sizewell C EPRs

S.3.3.3.1 **BEIS response to 8.3 Question 1 - When will be evaluated whether the UK EPR™ meets the safety goal of practical elimination of accident sequences leading to large or early releases of radioactive substances according to the approach of WENRA 2019? What could be the consequences for the Sizewell C Project if SZC Co. fails to meet this important safety objective for European NPPs?**

According to BEIS at paragraph 5.4.6:

> "Both SZC Co. and ONR routinely review new guidance from organisations such as WENRA. The next update to the NNB GenCo Nuclear Safety Design Assessment Principles will take cognisance of any new information in the WENRA 2019 guidance. However, it is considered that the NNB GenCo Nuclear Safety Design Assessment Principles and ONR Safety Assessment Principles are already very robust standards. The Sizewell C design already meets, and generally exceeds, the expectations in these standards and as such it is unlikely the review against the latest WENRA 2019 guidance will result in an impact to Sizewell C."

A suggestion above that,

> "it is unlikely the review against the latest WENRA 2019 guidance will result in an impact to Sizewell C",

may be said to amount to speculation by BEIS as to the degree and extent to which Sizewell C has as a question of fact been determined compliant with the 2019 WENRA (Western European Nuclear Regulators Association) principles.

S.3.3.3.2 **The ONR response to 8.3 Question 2 - Is it planned to review whether the UK EPR™ design meets the recent European safety standards/requirements by WENRA?**

S.3.3.3.3 According to the ONR (see Annex B attachment: ONR Response to the Secretary of State, April 2022, CM9 Ref. 2022/20680):

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[5] **NNB Generation Company (SZC) Limited** (PDF, 4 MB)
Response to SoS request for information of 18 March 2022 - Main Report
Decision > Secretary of State Consultation > Response to SoS request for information of 18 March 2022
Published: 11/04/2022
https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010782-SZC%20-%20Main%20Report.pdf

> "We actively participate in related international activities and routinely review new guidance from international organisations such as WENRA. Whenever we update the SAPs and TAGs, we take into consideration any relevant new information and expectations from WENRA and from other organisations."

For its part, the ONR provides a seemingly insufficient two-fold response.

a. On the one hand, the ONR indicate that the current Safety Assessment Principles (SAP) and the Technical Assessment Guides (TAG) have not yet been updated to reflect WENRA 2019.

b. On the other hand, the ONR "routinely review new guidance from international organisations such as WENRA."

However, somewhat inexplicably, the ONR appear remiss in failing to refer Interested Parties, and the Secretary of State, to the relevant routine review evidence evaluating the Applicant's Nuclear Safety Design Assessment Principles (as well as perhaps the ONR SAP and TAG) against the WENRA 2019 guidance. The oversight is all the more puzzling in view of the Applicant's admission (see para.5.4.1 in: Main Report[6] *Response to SoS request for information of 18 March 2022*) that the NNB GenCo NSDA Principles as applied to the Sizewell C design are based on WENRA guidance issued nine years previously. Notably:

> "…The current version of the principles references WENRA guidance from 2010."

Under the circumstances, not the least in view of the transboundary context, might the ONR be minded to rectify the oversight?

J Chanay
23.05.2022

[6] **NNB Generation Company (SZC) Limited** (PDF, 4 MB)
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