



Department for  
Business, Energy  
& Industrial Strategy

1 Victoria Street  
London  
SW1H 0ET

Web: [www.gov.uk/beis](http://www.gov.uk/beis)

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To:

Our Ref: EN010012

All Interested Parties  
NNB Generation Company (SZC) Limited  
Natural England

Date: 25 April 2022

Dear Sir or Madam,

**Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010**

**Application by NNB Generation Company (SZC) Limited (“the Applicant”) for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station (“the proposed Development”)**

1. Following the completion of the Examination on 14 October 2021, the Examining Authority (“ExA”) submitted a Report and Recommendation in respect of its findings and conclusions on the application for the proposed Development (the “Application”) to the Secretary of State for Business, Energy & Industrial Strategy (“the Secretary of State”) on 25 February 2022. The statutory deadline for determining the Application is 25 May 2022.
2. The Secretary of State issued two letters requesting further information on 18 March 2022 and 31 March 2022. The deadline for response was 8 April 2022 and 14 April 2022 respectively.
3. The Secretary of State now invites **all Interested Parties** to comment on the responses to those two letters. These responses have been published on the PINS project page:

<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/?ipcsection=docs&stage=6&filter1=Secretary+of+State+Consultation>

4. In addition, the Secretary of State notes the position of **Natural England** in relation to Section 281 of the Wildlife and Countryside Act 1981. The Secretary of State does not confirm agreement with that position, noting that the duty under s281(2) is to notify Natural England of the proposal, rather than the decision, and that the

Secretary of State appoints the Examining Authority to handle the application on his behalf. He also notes that Natural England have participated throughout the examination. However for the avoidance of doubt, and to avoid any further delay, the Secretary of State refers **Natural England** to the notice attached at Annex A.

5. A letter to the Government of Austria is appended at Annex B, for information.
6. The Secretary of State also raises two specific points below for the **Applicant** to respond to. The Applicant should respond to these specific questions as soon as possible, by email only to: [sizewellc@planninginspectorate.gov.uk](mailto:sizewellc@planninginspectorate.gov.uk), **but by no later than 23.59 on 2 May 2022**. Those responses will be published on the Sizewell C Nuclear Power Station project page of the National Infrastructure Planning website as soon as possible after receipt.

### **Traffic and Transport Mitigation**

7. In light of the Applicant's response to paragraph 4.1 of the Secretary of State's letter of 18 March 2022, the **Applicant** is asked to provide details as to any further mitigation that could be provided in relation to noise and vibration impacts on this part of the B1122 before the SLR is in place, for example, but not limited to, pre-construction surveys, monitoring of affected properties along the B1122, remedial works etc.

### **References to Certified Documents**

8. The Secretary of State notes that there appear to be discrepancies between the references in the Examination Library ("EL") provided to the Secretary of State by the Examining Authority, when reviewed against the list of Certified Documents in Schedule 24 of the draft Development Consent Order ("Schedule 24"):
  - Access Road Plan – Reference 2.14 in the draft Order compared with Reference 2.13 in the EL
  - Draft Water Monitoring and Management Plan – Reference 10.12 in the draft Order, compared with Ref 9.87 in the EL
  - Environmental Statement, Reference 6.1 to 6.18 in the draft Order, compared with a last reference of 6.20 in the EL
  - Parameter Plans – Reference 2.5 to 2.12 in the draft Order, compared with 2.5 only in the EL
  - Wet Woodland Strategy – Reference 10.31 in the draft Order, compared with 9.8 in the EL. The Secretary of State notes that the latest version of this document has now been uploaded to the PINS website in the post-examination submissions bundle that can be found at this link:  
<https://infrastructure.planninginspectorate.gov.uk/wp-content/uploads/projects/EN010012/EN010012-010790-Post%20Examination%20Submissions.pdf>
9. The **Applicant** should provide an explanation as to why the references in the draft Order do not align with the references in the EL, and to indicate clearly what the

correct references in the draft Order should be. The **Applicant** should ensure that final versions of any documents that are referred to in Schedule 24 have been provided.

10. **Subject to paragraph 5 above, comments should be submitted by email only to: [sizewellc@planninginspectorate.gov.uk](mailto:sizewellc@planninginspectorate.gov.uk) by 23.59 on 23 May 2022.**
11. Comments will be published on the Sizewell C Nuclear Power Station project page of the National Infrastructure Planning website as soon as possible after **23 May 2022**:  
<https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/>

Yours faithfully

*Gareth Leigh*

Gareth Leigh

Head of Energy Infrastructure Planning

## ANNEX A

### **Notice to Natural England under section 28I(2) of the Wildlife and Countryside Act 1981 of proposed operations as part of the proposed Sizewell C Nuclear Power Station (“the Proposed Development”)**

The Secretary of State provides Natural England with notice of proposed operations likely to damage the flora, fauna or geological or physiographical features by reason of which a site of special scientific interest is of special interest in relation to the proposed Sizewell C Nuclear Power Station (“the Proposed Development”) located near Leiston in Suffolk, in accordance with section 28I(2) of the Wildlife and Countryside Act 1981.

The Proposed Development is subject to an application for development consent under the Planning Act 2008 and details of the proposals are available online at <https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/>.

Details of the proposed operations likely to damage the features of a site of special scientific interest are contained in the document *Deadline 10 Submission - 9.10.7 Statement of Common Ground - Natural England* (REP10-097).

In accordance with section 28I(4) of the 1981 Act, the Secretary of State acknowledges that Natural England has 28 days from the date of this notice, to the extent that this has not already been provided, to submit any further advice for the Secretary of State to take into account when taking his decision on whether to grant development consent and if he does decide to do so, what (if any) conditions are to be attached to the development consent.

The Secretary of State received the Examining Authority’s Report on the Proposed Development on 25 February 2022. The Secretary of State has until 25 May 2022 to take the decision on whether to grant or refuse development consent for the Proposed Development.

# ANNEX B



Department for  
Business, Energy  
& Industrial Strategy

1 Victoria Street  
London  
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Web: [www.gov.uk/beis](http://www.gov.uk/beis)

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To:

Dr Platzer-Schneider  
Official in Charge  
Federal Ministry Republic of Austria  
Stubenbastei 5, 1010 Wien  
Vienna, Austria

Our Ref: EN010012  
Your Ref: 2020-0.439.265

Date: 25 April 2022

Dear Dr Platzer-Schneider,

**Planning Act 2008 and The Infrastructure Planning (Examination Procedure) Rules 2010**

**Application by NNB Generation Company (SZC) Limited (“the Applicant”) for an Order granting Development Consent for the proposed Sizewell C Nuclear Power Station (“the proposed Development”)**

I write in relation to the above proposed Development.

The examination stage of the development consent process has come to a close and the Secretary of State has now received the Examining Authority’s report. The Secretary of State must now consider whether development consent should be granted.

Upon receipt of the Examining Authority’s report, the Secretary of State has asked the Office of Nuclear Regulation and the Applicant for their final response to the questions you have raised. These responses are attached at Annex A and Annex B, and are also available online at:

<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010763-Office%20for%20Nuclear%20Regulation%20-%2008%20April%202022.pdf>

<https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-010782-SZC%20-%20Main%20Report.pdf>

The Secretary of State would be grateful for any final expert statement or further comments from the Government of Austria by **23 May 2022**. He will then be considering all of the issues in relation to this project and will make his final decision as to whether development consent should be granted.

**Your response should be submitted by email only to: [beiseip@beis.gov.uk](mailto:beiseip@beis.gov.uk) by 23.59 on 23 May 2022.**

Your response will be published on the Sizewell C Nuclear Power Station project page of the National Infrastructure Planning website as soon as possible after **23 May 2022**: <https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/>

This letter is without prejudice to the Secretary of State's consideration of whether to grant or withhold development consent for the Sizewell C Nuclear Power Station or any part of the project. Nothing in this letter is to be taken to imply what the eventual decision might be or what final conclusions the Secretary of State may reach on any particular issue which is relevant to the determination of the application.

Yours faithfully

*Gareth Leigh*

Gareth Leigh

Head of Energy Infrastructure Planning



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## 5 QUESTIONS FROM THE GOVERNMENT OF AUSTRIA

### 5.1 Introduction

5.1.1 This section provides SZC Co.'s response to the questions raised in chapter 8 of the ESPOO Convention Response from the Austrian Government of 17 September 2020: [EN010012-003106-EN010012 Regulation 32 - Consultation response from Austria.pdf \(planninginspectorate.gov.uk\)](#).

5.1.2 Since the submission of the Sizewell C Development Consent Order (DCO) application in May 2020, the UK Government has formally submitted a General Data Set in relation to the Sizewell C Project to the European Commission under Article 37 of the Euratom Treaty.

5.1.3 Although the Article 37 process is separate from the ESPOO requirements, which the UK meets through its DCO Examination process, it is noted there are strong areas of overlap, particularly in the assessment of transboundary impacts to member states.

5.1.4 In February 2021, a UK delegation, including individuals from the UK Regulators, UK Government and SZC Co. provided evidence which was assessed in an Oral Hearing by a Panel of Member State Experts under Article 37. This included individuals from the Austrian Government (G Mraz - who co-authored the "Sizewell C Environmental Impact Assessment" from the Austrian Government included in the 17 September 2020 response - and C Katzlberger).

5.1.5 On 3 June 2021 the UK received a positive opinion from the European Commission under Article 37 concluding *"that the implementation of the plan for the disposal of radioactive waste in whatever form, arising from the two EPR reactors on the Sizewell C nuclear power station site located in the Suffolk Coast, United Kingdom, both in normal operation and in the event of accidents of the type and associated magnitudes of unplanned release of radioactive effluents, as considered in the General Data, is not liable to result in radioactive contamination, significant from the point of view of health, of the water, soil or airspace of a Member State, in respect of the provisions laid down in the Basic Safety Standards (Directive 2013/59/Euratom)."* - [EUR-Lex - 32021A0610\(01\) - EN - EUR-Lex](#)

5.1.6 The Article 37 submission and the associated Oral Hearing provided answers to a number of the questions raised by the Austrian Government under ESPOO, however for completeness responses are provided below.

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## 5.2 Response to 8.1: Spent fuel and radioactive waste

- a) Question 1 - What is the timetable of the planned dry interim storage for spent fuel?

5.2.1 Volume 2, Chapter 7 of the ES (Spent Fuel and Radioactive Waste Management) [APP-192] presents an overview of the proposed arrangements for the management of radioactive wastes and spent fuel arising during operation of Sizewell C.

5.2.2 This sets out (paragraph 7.7.79-7.7.80) [APP-192] that:

*"7.7.79 At each UK EPRTM unit at Sizewell C, fuel assemblies removed from the reactor would be cooled underwater in an on-site reactor fuel pool for up to 10 years ...*

*7.7.80 Following this initial storage period in the on-site reactor fuel pool, the spent fuel assemblies would be prepared for transfer to the separate on-site [interim spent fuel store] ISFS, where they would be safely stored until a Geological Disposal Facility is available for transfer, and the spent fuel is suitable for final disposal."*

5.2.3 Paragraph 7.7.81 [APP-192] goes on to explain that:

*"7.7.81 Therefore the Interim Spent Fuel Store (ISFS) would provide storage for spent fuel from the Sizewell C UK EPR™ reactor units from around 10 years after the start-up of Unit 1 until the spent fuel is transferred off-site for disposal at the Geological Disposal Facility. The ISFS would be designed such that it can store spent fuel for up to 120<sup>9</sup> years. This would allow interim storage to be maintained until a Geological Disposal Facility, or an alternative disposal/management route, has been established and the heat levels within the fuel are at levels that permit its disposal."*

5.2.4 As set out in paragraph 7.7.85 [APP-192]:

*"The design and operation of the facility would be required to be compliant with the Nuclear Site Licences, and Radioactive Substances Regulations environmental permit with regard to the safety of workers, public and*

<sup>9</sup> Note that the design life is 100 years with capability to extend to 120 years plus if required.



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*the impact on the environment. The facility would be designed, constructed and operated to comply with the Ionising Radiation Regulations 2017, ensuring doses to workers and the public would be minimised as far as reasonably practicable."*

- b) Question 2 - What is the status of the geological repository for spent fuel and HLW [high level waste]?

5.2.5 As set out in **Table 4.28** (Radiological Considerations) of the **Relevant Representations Report** [[REP1-013](#)]:

*"UK Government Policy is for the UK's Higher Activity Radioactive Waste (Intermediate Level Waste and High Level Waste) and Spent Fuel to be disposed of via a UK Geological Disposal Facility. The delivery of this facility is managed by Radioactive Waste Management Limited, a subsidiary of the Nuclear Decommissioning Authority."*

5.2.6 **Volume 2, Chapter 7** of the **ES** (Spent Fuel and Radioactive Waste Management) [[APP-192](#)] paragraph 7.7.91 notes:

*"With regard to the availability of a Geological Disposal Facility, Radioactive Waste Management Ltd have published their plans for the scheduling and implementation of the Geological Disposal Facility<sup>10</sup>."*

5.2.7 Since the DCO application was submitted, Radioactive Waste Management Ltd. has become part of "Nuclear Waste Services Limited"<sup>11</sup> and three potential sites for the geological disposal facility have been identified, with local working groups set up.

- c) 8.1 Question 3 - How can the safe storage of spent fuel be ensured in case the interim storage and final disposal will not be available in time?

5.2.8 As set out in **Volume 2, Chapter 7** of the **ES** (Spent Fuel and Radioactive Waste Management) [[APP-192](#)], the UK regulatory permissions regime for nuclear power stations defines precise regulatory requirements and expectations for the management of spent fuel and radioactive waste. Details on the legislation, policy and guidance which apply to ensure safe

<sup>10</sup>

[https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/766643/Implementing\\_Geological\\_Disposal\\_-\\_Working\\_with\\_Communities.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/766643/Implementing_Geological_Disposal_-_Working_with_Communities.pdf)

<sup>11</sup> [Nuclear Waste Services launches - GOV.UK \(www.gov.uk\)](https://www.gov.uk)

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storage are set out in **section 7.2** Legislation, policy and guidance, with further details on management of spent fuel set out in **section 7.7 d**).

5.2.9 In line with the UK regulatory requirements, the facility would be subject to periodic safety reviews to ensure the safety case for its operation remains valid and that any shortfalls from the modern standards are identified and addressed.

5.2.10 As set out in **Table 4.28** (Radiological Considerations) of the **Relevant Representations Report [REP1-013]**, if the ISFS is required for longer than the currently proposed design life:

*".... Given the relatively simple design of these facilities, they would be capable of extension beyond this period, if necessary, subject to any required refurbishment and or replacement of equipment".*

d) [Question 4 - Is it planned to use copper for the spent fuel canisters, and if yes, how will the copper corrosion problem be solved?](#)

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.

5.2.12 The spent fuel would then undergo treatment (drying) and be loaded into a multi-purpose canister (MPC) which will be sealed and is capable of passively cooling the contained spent fuel with no external support. Loaded and sealed MPCs would be transported from the fuel building along the haul route to the Interim Spent Fuel Storage (ISFS) facility, where they would be stored.

5.2.13 The spent fuel would remain here until disposal at the UK Geological Disposal Facility is available. The intended design life for the ISFS facility is for storage of spent fuel for 100 years, but with the potential to extend to 120 years+ after end of generation.

5.2.14 When operational the ISFS facility will contain stored MPCs in HI-Storm containers. Throughout the operational life of this facility, an inspection and monitoring regime is expected to be implemented to ensure that fuel is safely stored (inspection and monitoring is a legal requirement under nuclear site licence condition (LC) 28). Prior to the spent fuel being transferred to the Geological Disposal Facility, the fuel will be required to be repackaged and encapsulated into compliant containers suitable for disposal.

5.2.15 Dry storage of spent fuel has been used widely and previously licensed in the UK and internationally. The MPC and HI-Storm are constructed of a Neutron Absorber, Concrete and Stainless Steel and as such are not copper based. Details of the final disposal container will be confirmed closer to transport to the Geological Disposal Facility and will be subject to regulatory assessment.

### 5.3 Response to 8.2: Reactor type

a) Question 1 - Which of the assessment findings of the ONR's GDA step 4 assessment of Severe Accidents for the UK EPR™ have already been solved? How were they solved and if not, when is a solution expected for those?

5.3.1 SZC Co. has undertaken an impact assessment of all 716 assessment findings raised by Office for Nuclear Regulation (ONR) during the EPR Generic Design Assessment (GDA), including the 26 related to Severe Accidents. This assessment was to determine whether the way these were addressed for the Hinkley Point C UK EPR remains applicable for Sizewell C.

5.3.2 The conclusion from this assessment was that no new or additional work was required in relation to Severe Accident assessment findings, i.e. that the plan for resolution of the assessment findings could be replicated for the Sizewell C project. The solutions to these assessment findings are based around changes to the UK EPR design or requirements added to operational or manufacturing documentation. All of these changes are being adopted (replicated) for Sizewell C.

b) Question 2 - Does the UK EPR™ correspond to the EPR in Finland and/or France? If not, where does the design deviate?

5.3.3 The reference design plant for the UK EPR™, including the design that was subjected to the GDA by the UK nuclear regulators, is the Flamanville 3 plant in France.

5.3.4 As a result of the GDA outcomes, there were a number of modifications made to the UK EPRTM design, relative to the original Flamanville 3 design, taking on board site specific considerations and to bring it into line with UK Regulatory Expectations.

5.3.5 Additionally, improvements made to the Flamanville 3 design throughout its design, construction and commissioning phases have continued to be provided by EDF SA and screened for applicability for the UK EPRTM design.

5.3.6 These have initially been implemented in the Hinkley Point C design and will be replicated for Sizewell C. The design of the UK EPR™ for Hinkley Point C and Sizewell C is described in the Hinkley Point C Pre-Construction Safety Report (PCSR3), which is available on EDF's website<sup>12</sup>.

## 5.4 Response to 8.3: Accident analysis

a) 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?

5.4.1 The UK EPR™ design being built at Hinkley Point C has been assessed against the NNB GenCo Nuclear Safety Design Assessment Principles ("the principles"), developed by NNB GenCo to meet UK and worldwide regulatory requirements. These incorporate advice from ONR, International Atomic Energy Industry (IAEA) standards, Western European Nuclear Regulators Association (WENRA) and other sources where relevant. The current version of the principles references WENRA guidance from 2010.

5.4.2 The Sizewell C design will also be assessed against the principles although, since the design of the nuclear island is identical in both designs, no difference is expected from the assessment. Of note, the principles state:

*"Adequate safety measures should be implemented to mitigate severe accidents, including:*

*Demonstrating that severe accidents which lead to large early releases due to containment failure are practically eliminated;*

*Demonstrating that the consequences of a degraded core can be mitigated to reach a Severe Accident Safe State indefinitely."*

5.4.3 Also:

*"The significant phenomena involved in a severe accident shall be identified and analysed. Highly energetic phenomena which have the potential to breach*

<sup>12</sup> [Gas & Electricity Suppliers for Home & Business | EDF](#) ( )

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*the containment early in the sequence, leading to large early releases, shall be practically eliminated.”*

- 5.4.4 The assessment of the UK EPR™ design for Hinkley Point C design against these principles has shown the design to be compliant and all probabilistic targets met, with risks reduced as low as reasonably practicable (ALARP).
- 5.4.5 The safety case has been assessed by ONR, using their own Safety Assessment Principles, and also judged acceptable against their deterministic and probabilistic criteria for design basis and severe accidents, with risks that are reduced ALARP. Replication will ensure this conclusion is also applicable for Sizewell C.
- 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.
- b) Question 2 - Is it planned to review whether the UK EPR™ design meets the recent European safety standards/requirements by WENRA?
- 5.4.7 See response to 8.3 Q1 above.
- c) Question 3 - According to WENRA (2019), all WENRA countries apply the notion of practical elimination to types I and II; some countries also apply it to type III. For which types of scenarios should the concept of practical elimination be applied in the UK?
- 5.4.8 The NNB GenCo Nuclear Safety Design Assessment Principles specifically outline scenarios equivalent to Types I and II. However, it should be noted that the UK EPR™ design has extensive additional provisions to protect against Severe Accident scenarios, including additional enhancements linked to studies post-Fukushima, such as the ability to use portable pumps and alternative water supplies to provide containment heat removal.
- 5.4.9 As a result, the UK EPR™ design has been demonstrated to not require the installation of a filtered containment vent system in order to maintain containment integrity in a severe accident, although the design retains the option to back-fit this at a later date. Therefore, while Type III practical

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elimination is not specifically required by the NNB GenCo Principles, the UK EPR™ design already exceeds what is required by the principles.

d) Question 4 - Which of the assessment findings of the ONR's GDA step 4 assessment of Probabilistic Safety Analysis for the UK EPR™ are solved already? How were they solved and, if no solution has been found yet, when should they be solved?

5.4.10 See general comments in relation to severe accidents (8.3 Q1 above).

5.4.11 More specifically, this considers 46 assessment findings linked to Probabilistic Safety Analysis (PSA). These findings mainly relate to the need for a plant specific PSA model and for modelling to meet UK regulatory expectations in relation to data and modelling assumptions. Resolution of these assessment findings has been agreed with ONR for Hinkley Point C and they are all replicable for Sizewell C. Indeed, a common PSA model has been developed that will be adopted for Sizewell C.

5.4.12 The only areas with regard to PSA that will require work are in relation to some site-specific data elements e.g. the PSA Level 3 model takes account of wind direction, population locations, specific to the site. It is worth noting that, while this will alter the outputs slightly relative to Hinkley Point C, the change will not be significant and will not result in design change. This work is expected as part of the Sizewell C Pre-Construction Safety Report, so in advance of any nuclear safety related construction.

e) Question 5 - Which recent national and international studies concerning external hazards (flooding risk, seismic hazard, tsunami and climate change) have to be taken into consideration to determine design basis requirements? Which margins against external hazards have to be implemented for the Sizewell C?

5.4.13 The Sizewell C site has been subject to full characterisation of all hazards. These characterisation studies have taken full consideration of UK and worldwide best practice and latest available data, have been assessed by ONR and meet all their expectations:

- For the seismic hazard, this has involved a full Probabilistic Seismic Hazard Assessment (PSHA) to modern standards (SSHAC 2+), involving an extensive geo-technical assessment of the site.
- In relation to climate change, latest UK government guidance on climate change (UKCP18 – linked to latest IPCC guidance) has been taken into account for the full life of the station (using maximum

credible projections and sensitivities around maximum possible projections).

5.4.14 All natural hazard design bases (including flooding, tsunami and seismic, amongst many others) are conservatively defined in relation to a 1 in 10,000 year return frequency defined at the 84th percentile, in accordance with UK and worldwide best-practice. Beyond design basis studies are performed for levels well beyond these levels and demonstrate the UK EPR design to be robust against beyond design basis hazards.

## 5.5 Response to 8.4: Accidents with involvements of third parties

a) Question 1 - What are the requirements with respect to the planned NPP design against the deliberate crash of a commercial aircraft?

5.5.1 The UK EPRTM design is demonstrated as robust against deliberate crash of commercial aircraft. This is achieved mainly through a reinforced (concrete) containment structure for safety critical parts of the plant. This is combined with physical separation of critical elements that cannot be protected in this manner.

5.5.2 Furthermore, the UK EPRTM is designed to be resilient to loss of safety systems through the provision of redundant and diverse safety systems (such as those contained in multiple safeguards buildings). Further detail is security sensitive.

b) Question 2 - Does the UK EPR™ fulfil those requirements based on the present state of knowledge (not only relying on the data of the supplier but on the assessment of ONR)?

5.5.3 Yes. The safety case related to the deliberate crash of aircraft was accepted by ONR for Hinkley Point C. There is no change to the Sizewell C design or in worldwide best practice that would suggest ONR's position would be different for Sizewell C and no concerns have been raised as part of the Nuclear Site Licensing process.

## 5.6 Response to 8.5 Transboundary impacts

5.6.1 No questions were included in this section, but it may be helpful to note that a transboundary dose assessment from unplanned/accidental releases was included as part of Chapter 6 of the Sizewell C Article 37 Submission. This included consideration of a severe accident scenario (DEC-B), based on a core melt accident. A copy of this chapter was provided to the Examination as **Appendix B** to the **Relevant Representations Report**

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[\[REP1-013\]](#). An updated copy of this chapter is provided with this response, as **Appendix 6**, following an update during the Article 37 Process.

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Office for  
Nuclear Regulation

# **Sizewell C: Questions from the Government of Austria**

## **Response to the Secretary of State**

# **Sizewell C: Questions from the Government of Austria**

## **ONR Response to the Secretary of State**

April 2022

CM9 Ref. 2022/20680

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# Introduction

This document sets out the Office for Nuclear Regulation's (ONR) response to the request for further information or updates relating to the Sizewell C (SZC) development consent order (DCO) application, from the Secretary of State for Business, Energy & Industrial Strategy ("the Secretary of State") dated 18 March 2022: [EN010012-008877-Sizewell C - Secretary of State Information Request.pdf \(planninginspectorate.gov.uk\)](#).

The Secretary of State's letter notes that the Government of Austria had provided a submission on 17 September 2020 in accordance with the ESPOO Convention, concerning possible transboundary effects from Sizewell C [EN010012-003106-EN010012 Regulation 32 - Consultation response from Austria.pdf \(planninginspectorate.gov.uk\)](#).

The Secretary of State's letter requests the developer, NNB GenCo (SZC) Ltd and ONR to respond to the questions raised in the Austrian Government's submission.

## ONR's Role in the SZC Project

NNB GenCo (SZC) Ltd applied to ONR on 30 June 2020 for a nuclear site licence to construct and operate a nuclear power station comprising two UK (EPR™) reactors at Sizewell C in Suffolk.

Our [Licensing Nuclear Installations](#) guidance describes the licensing process and the factors that we may take into account when reviewing a nuclear site licence (NSL) application. Our licence assessment activities utilise our [Safety Assessment Principles](#) (SAPs), Technical Inspection Guides (TIGs) and [Technical Assessment Guides](#) (TAGs) as appropriate.

The outcome of our licence application assessment will be the production of a Project Assessment Report (PAR), which will make a recommendation to the Chief Nuclear Inspector (CNI) on whether to grant a licence. We are in the final stages of our assessment of the licence application.

In addition, during the course of the Planning Inspectorate's (PINS) examination of NNB GenCo (SZC) Ltd's application for Development Consent for the SZC project, we provided several submissions and responded to a number of written questions from PINS.

We were further involved in providing advice to the Secretary of State in the preparation of the UK Government's submission concerning SZC to the European Commission in accordance with Article 37 of the Euratom Treaty and participated in the oral examination of that material by the European Commission's Article 37 Group of Experts.

## Responses to the Austrian Government questions

The submission from Austria contains 13 questions which are set out in Chapter 8 of that document. Having discussed these with NNB GenCo (SZC) Ltd, we agreed that some of the

questions required a straightforward factual response regarding the project which we are content for NNB GenCo (SZC) Ltd to provide. Other questions have been considered by our relevant technical experts and where appropriate we have provided additional commentary on the answers provided by NNB GenCo (SZC) Ltd.

Using the numbering used in Chapter 8 of the Austrian Government's submission, we are content that NNB GenCo (SZC) Ltd provides answers to the following questions:

- 8.1 Q1 to Q4
- 8.4 Q2

Our responses to the remaining question are set out below.

### **8.2 Q1 Which of the assessment findings of the ONR's GDA step 4 assessment of Severe Accidents for the UK EPR™ have already been solved? How were they solved and if not, when is a solution expected for those?**

Of the assessment findings we raised during the UK EPR™ Generic Design Assessment (GDA), 26 related to Severe Accidents. For the Hinkley Point C (HPC) project, 11 of these have so far been closed<sup>1</sup>. The evidence submitted by the licensee for closure of these assessment findings has generally been of a technically detailed nature; our specialist inspectors have reviewed that evidence and have been content for each to be closed.

The licensee's supporting work for the remaining 15 assessment findings is progressing to achieve resolution prior to the allocated project milestones (these are typically late in the project, for instance containment pressure test or start of cold operations) and ONR is content that the HPC licensee is appropriately managing the resolution activities.

For Sizewell C, NNB GenCo (SZC) Ltd has concluded that no new or additional work was required in relation to severe accident assessment findings. We are content that the plan and supporting work for the resolution of the assessment findings for HPC are applicable to SZC.

### **8.3 Q1 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?**

The EPR design considered deterministically the practical elimination of large or early releases caused by high-pressure melt ejection, steam explosion and hydrogen combustion, and as such meets or exceeds the WENRA recommendations.

Our assessments of the safety case for the HPC EPR™ are carried out in accordance with our current Safety Assessment Principles (SAP) and Technical Assessment Guides (TAG). Both our SAPs and TAGs are revised regularly and take account of expectations from

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<sup>1</sup> See [REDACTED]. The GDAFs closed are: AF-UKEPR-CSA-010; AF-UKEPR-CSA-011; AF-UKEPR-CSA-012; AF-UKEPR-CSA-013; AF-UKEPR-CSA-017; AF-UKEPR-CSA-018; AF-UKEPR-CSA-019; AF-UKEPR-CSA-020; AF-UKEPR-CSA-022; AF-UKEPR-CSA-023; AF-UKEPR-CSA-024.

WENRA, including the treatment of accidents involving large or early releases of radioactive substances.

The design has continued to evolve, and the safety case is being developed to take account of this. Our assessments thus far, have concluded that the design is acceptable against our deterministic and probabilistic criteria for design basis and severe accidents, with risks reduced as low as reasonably practicable (ALARP). The design of the nuclear island for the SZC plant is identical to that at HPC, so conclusions concerning the very low likelihood of severe accidents, are expected to be the same.

**8.3 Q2 Is it planned to review whether the UK EPR™ design meets the recent European safety standards/requirements by WENRA?**

We undertake assessments of the developing EPR designs for HPC and SZC against our current SAPs in conjunction with relevant TAGs. 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.

**8.3 Q3 According to WENRA (2019), all WENRA countries apply the notion of practical elimination to types I and II; some countries also apply it to type III. For which types of scenarios should the concept of practical elimination be applied in the UK?**

As noted in the NNB GenCo (SZC) Ltd response to this question, their design safety assessment covers scenarios equivalent to Types I and II. In addition, the UK EPR™ design has extensive additional provisions to protect the containment in severe accident scenarios.

**8.3 Q4 Which of the assessment findings of the ONR's GDA step 4 assessment of Probabilistic Safety Analysis for the UK EPR™ are solved already? How were they solved and, if no solution has been found yet, when should they be solved?**

We agree with NNB GenCo (SZC) Ltd's response to this question. We would add that of the 46 assessment findings in this topic area, 26 have been closed for HPC. The evidence submitted by the licensee for closure of these assessment findings has generally been of a technically detailed nature; our specialist inspectors have reviewed that evidence and have been content for each to be closed.

Resolution of the outstanding 18 is not expected until much later in the HPC project, typically by the first loading of nuclear fuel. We are satisfied with the rate of closure of the outstanding assessment findings related to this topic.

**8.3 Q5. Which recent national and international studies concerning external hazards (flooding risk, seismic hazard, tsunami and climate change) have to be taken into consideration to determine design basis requirements? Which margins against external hazards have to be implemented for the Sizewell C?**

Our assessment of the SZC hazard characterisation studies is currently ongoing. Our assessment takes into account UK and international relevant good practice, including our SAPs and External Hazards TAG (NS-TAST-GD-013). SAP EHA.4 outlines our expectation that design basis events should be derived conservatively to take account of data and model uncertainties and that the design basis events are 1 in 10 000 years for natural external hazards and 1 in 100 000 years for man-made external hazards.

We are a sampling organisation and as part of our assessment of NNB GenCo (SZC) Ltd's site licence application we will not assess all the hazard characterisation studies. For some of those assessed, we have identified the need for further work by the licensee post-licensing (if a licence is granted) to enable the hazard characterisation studies to fully meet our expectations. However, we are not currently aware of any external hazards that would preclude the use of the SZC site or impact our decision on granting a nuclear site licence.

**8.4 Q1 What are the requirements with respect to the planned NPP design against the deliberate crash of a commercial aircraft? 2. Does the UK EPR™ fulfil those requirements based on the present state of knowledge (not only relying on the data of the supplier but on the assessment of ONR)?**

We expect deliberate crash of a commercial aircraft to be included in the design basis for a new nuclear power station. We assessed the deliberate crash of a commercial aircraft for the UK EPR™ as part of GDA and are satisfied that it is adequately taken into account in the design at HPC. The design of the nuclear island at SZC replicates that at HPC, including the protection against aircraft crash.

ONR, April 2022