

## Generic design assessment

UK EPR™ nuclear power plant design by  
Electricité de France SA and AREVA NP SAS

Supplement to the  
decision document

Summary



We are the Environment Agency. We protect and improve the environment and make it **a better place** for people and wildlife.

We operate at the place where environmental change has its greatest impact on people's lives. We reduce the risks to people and properties from flooding; make sure there is enough water for people and wildlife; protect and improve air, land and water quality and apply the environmental standards within which industry can operate.

Acting to reduce climate change and helping people and wildlife adapt to its consequences are at the heart of all that we do.

We cannot do this alone. We work closely with a wide range of partners including government, business, local authorities, other agencies, civil society groups and the communities we serve.

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## **Our role**

As the principal environmental regulator for the nuclear industry in England and Wales, the Environment Agency's role is to regulate discharges and waste disposals from nuclear power stations and to ensure that their impact on air, water and land is acceptable and minimised.

## **Generic design assessment**

In response to growing interest in nuclear power and potential applications to build new nuclear power stations in England and Wales, in 2007 we developed a new approach, Generic Design Assessment (GDA), for assessing the environmental acceptability of new reactor designs.

Electricité de France SA and AREVA NP SAS ('EDF and AREVA') submitted their UK EPR™ nuclear power plant design to us for assessment in August 2007. In 2011 we issued an interim Statement of Design Acceptability (iSoDA) for the UK EPR™ and published our [decision document](#), which provides full details of the GDA process. We have now issued a full Statement of Design Acceptability (SoDA), and a supplement to the 2011 decision document that explains developments since 2011 and why we are issuing a SoDA.

GDA means that we assess the acceptability of the generic environmental aspects of the nuclear reactor design before individual site applications are made. This approach allows us to get involved at the earliest stage where we can have most influence and where lessons can be learnt for site-specific applications.

The new GDA approach has given us the opportunity to work more closely with the Office for Nuclear Regulation (ONR), providing effectively a 'one-stop-shop' for nuclear regulation. The process has allowed a rigorous and structured examination of detailed environmental, safety and security aspects of the reactor designs, over approximately five years. We believe that GDA has improved efficiency both for the regulators and the nuclear industry, and is delivering greater protection for both people and the environment.

## **Our 2011 decision**

By issuing an iSoDA for the UK EPR™ design, we confirmed to industry that we were content that the environmental aspects of the design would meet the high standards we expect but that particularly significant, but still resolvable, issues remained that would need to be resolved before we would consider issuing a SoDA. The two GDA Issues we raised, jointly with the ONR, were:

- GI-UKEPR-CC02: Provide a consolidated Final GDA Submission, including agreed design changes for the UK EPR™
- GI-UKEPR-CC03: Consider and action plans to address the lessons learned from the Fukushima Event

Our decision document set out our detailed assessment of environmental aspects of the UK EPR™ nuclear power plant design. We used the comments and issues raised in our 2010 consultation to help inform our decisions.

## **Update to our decision**

For both GDA Issues, we asked EDF and AREVA to provide resolution plans to show how they would be addressed and, since December 2011, we have been assessing the supplementary information provided by EDF and AREVA. We are satisfied that

EDF and AREVA have now fully resolved the two GDA Issues, and we are issuing a full SoDA.

We are publishing a supplement to our 2011 decision document that summarises our assessment of EDF and AREVA's response to the GDA Issues, and details the changes to their submission. The supplement also summarises our assessment of the work undertaken by EDF and AREVA to address the other nuclear safety related GDA Issues raised by ONR, where it has informed our final decision.

## **Changes to the submission**

EDF and AREVA published their submission on their website in 2007 (<http://www.epr-reactor.co.uk>) and invited people to comment. The submission has been revised during GDA as would be expected to reflect developments. The submission comprises a pre-construction environment report (PCER) together with supporting documents. Our decision document references the PCER dated March 2011. The PCER has since been updated by EDF and AREVA to reflect additional information provided in response to the GDA Issues. The supplement to the decision document includes a summary of the changes made to the submission since March 2011. The changes confirm our assessment and conclusions in the decision document. However, the changes have led us to make minor changes or clarifications to a small number of paragraphs in our decision document and final assessment reports; these are documented in Annex 4 of the supplement. We consider that the changes are not so significant as to require re-issue of revised documents. The documents we published in 2011 should now be read with the changes listed in Annex 4 of the supplement to the decision document.

When reviewing the additional information provided by EDF and AREVA in response to the GDA Issues, we considered whether further consultation was necessary to help inform our assessments. We concluded that the additional information was not significant enough to benefit from further consultation.

## **GDA Issues raised by the Office for Nuclear Regulation (ONR)**

ONR also raised 29 safety related GDA Issues in addition to the two we issued jointly with them. We reviewed the information provided by EDF and AREVA in response to these GDA Issues and the associated ONR assessment reports to assess if there was any potentially significant impact on environmental matters or on our decision of 2011. We noted that, while modifications to the UK EPR™ design were proposed in response to some nuclear safety related GDA Issues, these did not adversely affect the environmental impact and in some cases they were beneficial. We conclude that the additional information provided does not change the conclusions or assessment findings in our decision document.

In parallel with our issue of a SoDA, ONR has concluded that it is satisfied with the design and safety cases presented by EDF and AREVA for the UK EPR™ reactor, and has issued its equivalent approval in the form of a Design Acceptance Confirmation (DAC). Further information on the ONR assessment is available at [www.hse.gov.uk/newreactors](http://www.hse.gov.uk/newreactors)

## **Further assessment findings**

GDA is not intended to provide a complete assessment of the final reactor design, as there will be other issues, operator-specific or site-specific, that we would expect to be considered during the environmental permitting and site licensing stages. In some instances the safety case can only be validated by procurement or later testing or commissioning. This validation process is normal regulatory business and will be

subject to appropriate regulatory controls. We highlighted a number of these assessment findings in the 2011 decision document.

We would expect these findings to be addressed either by the designer or by a future operator / licensee, as appropriate, during the detailed design, procurement, construction, commissioning or early operational phases of a new build project. As a result of our assessment of EDF and AREVA's response to the GDA Issues, including those raised by ONR, we have identified further assessment findings. The full list of assessment findings is published as a separate annex in our supplement to the decision document.

## **Our decision**

We have completed a detailed assessment of EDF and AREVA's GDA submission for the UK EPR<sup>TM</sup> nuclear power plant design, including their response to the GDA Issues that we identified in our December 2011 decision document. We have decided to issue a Statement of Design Acceptability (SoDA) for the UK EPR<sup>TM</sup>.

The full supplement to the decision document for the UK EPR<sup>TM</sup> reactor is available at <https://brand.environment-agency.gov.uk/mb/Cb9Qpt>, using email [gda@environment-agency.gov.uk](mailto:gda@environment-agency.gov.uk), or by telephone to our National Customer Contact Centre on 03708 506 506.

## **Next steps**

The detailed design of the UK EPR<sup>TM</sup> and the safety and environment cases that support it will evolve if operators take forward site-specific proposals. We expect that the generic reactor design submitted for GDA and the SoDA would be used to underpin the permissions to construct reactors of the UK EPR<sup>TM</sup> type that are more or less identical, except for site- and operator-specific requirements.

As an example, the generic UK EPR<sup>TM</sup> design assessed in GDA forms the basis of the application by EDF Energy's and Centrica's joint venture company, NNB Generation Company Limited for environmental permits to operate a proposed new nuclear power station it wishes to build at Hinkley Point in Somerset. Further information on our role in permitting the proposed power station and associated developments can be found on our website at: <http://www.environment-agency.gov.uk/homeandleisure/127159.aspx>

The issue of both a SoDA by the Environment Agency and a DAC by ONR do not in themselves allow any additional activity in terms of nuclear power station construction as that requires both approval of a Development Consent Order by the Secretary of State for Energy, and a specific regulatory permission given by ONR under a Nuclear Site Licence Condition.

The SoDA will remain valid for ten years from the date of issue, after which time the UK EPR<sup>TM</sup> design would need to be reviewed and reassessed.

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