



Asesu cynlluniau gorsafoedd niwclear newydd

Asesiad cynllun generig o gynllun gorsaf niwclear AP1000[®] Westinghouse Electric Company LLC

Atodiad i'r ddogfen benderfynu

Crynodeb

30 Mawrth 2017

Ni yw Asiantaeth yr Amgylchedd. Rydym ni'n gwarchod ac yn gwella'r amgylchedd.

Mae gweithredu i leihau effaith hinsawdd newidiol ar bobl a bywyd gwyllt wrth graidd popeth a wnawn ni.

Rydym ni'n lleihau'r perygl a allai ddod yn sgil llifogydd ac erydu arfordirol i bobl, eiddo a busnesau.

Rydym ni'n gwarchod ac yn gwella ansawdd dŵr, gan sicrhau bod digon ar gael i bobl, busnesau, amaethyddiaeth a'r amgylchedd. Mae ein gwaith yn sicrhau y gall pobl fwynhau'r amgylchedd ddŵr drwy gyfrwng pysgota ac mewn cychod.

Rydym ni'n gofalu am ansawdd tir, yn hybu rheoli tir yn gynaliadwy ac yn helpu i warchod a gwella cynefinoedd bywyd gwyllt. Ac rydym ni'n cydweithio'n agos â busnesau i'w helpu i gydymffurfio â rheoliadau amgylcheddol.

Allwn ni ddim â gwneud hyn ar ein pen ein hunain. Rydym ni'n gweithio gyda'r llywodraeth, cynghorau lleol, busnesau, grwpiau cymdeithasau sifil a chymunedau er mwyn gwneud ein hamgylchedd yn lle gwell ar gyfer pobl a bywyd gwyllt.

Cyfoeth Naturiol Cymru yw'r corff mwyaf a noddir gan Lywodraeth Cymru. Cawsom ein ffurfio ym mis Ebrill 2013, gan ymgorffori, i bob pwrpas, waith Cyngor Cefn Gwlad Cymru, Comisiwn Coedwigaeth Cymru ac Asiantaeth yr Amgylchedd yng Nghymru, yn ogystal â rhai o swyddogaethau Llywodraeth Cymru. Mae'r gwaith a wnawn yn sicrhau bod amgylchedd ac adnoddau naturiol Cymru'n cael eu rheoli, eu gwella a'u defnyddio'n gynaliadwy, heddiw ac i'r dyfodol.

Cyhoeddwyd gan:

Asiantaeth yr Amgylchedd
Horizon House, Deanery Road,
Bryste BS1 5AH
E-bost: enquiries@environment-agency.gov.uk
www.gov.uk/environment-agency

Gellir cael rhagor o gopïau o'r adroddiad hwn oddi wrth ein catalog cyhoeddiadau:
www.gov.uk/government/publications

neu ein Canolfan Gyswilt Genedlaethol i Gwsmeriaid:
T: 03708 506506

E-bost: enquiries@environment-agency.gov.uk.

© Asiantaeth yr Amgylchedd 2017

Cedwir pob hawl, Gellir atgynhyrchu'r ddogfen hon gyda chaniatâd ymlaen llaw gan Asiantaeth yr Amgylchedd.

Ein rôl

Ein rôl, fel rheoleiddwyr amgylcheddol y diwydiant niwclear yn Lloegr (Asiantaeth yr Amgylchedd) a Chymru (Cyfoeth Naturiol Cymru), yw rheoleiddio allyriadau a gwaredu gwastraff o atomfeydd er mwyn sicrhau bod eu heffaith ar aer, dŵr a thir yn dderbyniol a chyn lleied â phosib.

Asesiad cynllun generig

Mewn ymateb i ddi-ddordeb cynyddol mewn ynni niwclear a'r darpar geisiadau i adeiladu gorsafoedd niwclear newydd yng Nghymru a Lloegr, bu i ni ddatblygu dull newydd o weithredu yn 2007, sef asesiad cynllun generig (generic design assessment - GDA), er mwyn asesu a yw cynlluniau adweithyddion newydd yn dderbyniol yn amgylcheddol.

Cyflwynodd Westinghouse Electric Company LLC (Westinghouse) ei gynllun AP1000® ar gyfer gorsaf niwclear i ni er mwyn ei asesu ym mis Awst 2007. Yn 2011, bu i ni gyhoeddi Datganiad Cynllun Derbyniol interim (iSoDA) ar gyfer yr AP1000® ynghyd â chyhoeddi ein dogfen benderfynu, sy'n rhoi manylion llawn y broses GDA. Erbyn hyn rydym wedi cyhoeddi Datganiad Cynllun Derbyniol llawn (SoDA) ac mae hyn yn atodol i ddogfen benderfynu 2011, gan esbonio'r datblygiadau ers 2011 a'r rheswm pam yr ydym yn cyhoeddi SoDA nawr.

Mae GDA yn golygu ein bod yn asesu a yw agweddau amgylcheddol generig cynllun yr adweithydd niwclear yn dderbyniol cyn i unrhyw geisiadau safle unigol gael eu gwneud. Mae'r dull hwn o weithredu'n caniatáu i ni ddod yn rhan o'r broses ar y cyfle cyntaf ble gallwn gael y dylanwad mwyaf a ble gellir dysgu gwersi ar gyfer ceisiadau safle-benodol.

Drwy'r dull GDA o weithio, rydym ni'n cydweithio'n agos â'r Swyddfa Reoleiddio Niwclear (ONR), rheoleidiwr y DU dros ddiogelwch niwclear, i sicrhau bod unrhyw orsafoedd niwclear newydd a adeiledir yn y DU yn cwrdd â'r safonau uchaf o ran diogelwch, gwarchodaeth amgylcheddol a rheoli gwastraff, a'u bod yn rhoi mwy o ddiogelwch i bobl a'r amgylchedd fel ei gilydd.

Ein penderfyniad yn 2011

Drwy gyhoeddi iSoDA ar gyfer cynllun AP1000®, roeddem ni'n cadarnhau ein bod ni'n fodlon y byddai agweddau amgylcheddol y cynllun yn cwrdd â'r safonau uchel a ddisgwylir gennym, ond fod materion arbennig o sylweddol, yr oedd modd eu datrys, yn parhau a fyddai angen eu datrys cyn i ni allu ystyried cyhoeddi SoDA. Y ddau fater GDA a godwyd gennym, ar y cyd â'r ONR, oedd:

- [GI-UKAP1000-CC-02](#): "PCSR i gefnogi GDA" – darparu cyflwyniad GDA terfynol wedi'i atgyfnerthu, gan gynnwys newidiadau cynllunio a gytunwyd ar gyfer yr adweithydd AP1000®.
- [GI-UKAP1000-CC-03](#): "Ystyried a gweithredu cynlluniau i gyfeirio at y gwersi a ddysgwyd o ganlyniad i Ddigwyddiad Fukushima" - er mwyn dangos sut y mae Westinghouse wedi ystyried y gwersi a ddysgwyd o ganlyniad i'r digwyddiadau digynsail a ddigwyddodd yn Fukushima.

Roedd ein dogfen benderfyniad yn amlinellu ein hasesiad manwl o agweddau amgylcheddol cynllun yr orsaf niwclear UK AP1000®. Defnyddiwyd y sylwadau a'r materion a godwyd yn ein hymgyngoriad o 2010 gennym i'n helpu i ddod i benderfyniadau.

Diweddaru ein penderfyniad

Ar gyfer y ddau Fater GDA, bu i ni ofyn i Westinghouse ddangos sut y byddai'n ymdrin â nhw, ac ers mis Rhagfyr 2011, rydym wedi bod yn asesu'r wybodaeth bellach a ddarparwyd gan Westinghouse. Rydym ni'n fodlon fod Westinghouse bellach wedi datrys yn llawn y ddau Fater GDA, ac rydym ni'n cyhoeddi SoDA llawn.

Mae'r atodiad hwn i'n dogfen benderfyniad o 2011 yn crynhoi ein hasesiad o ymateb Westinghouse i'r Materion GDA, ac yn manylu ar y newidiadau i'r cyflwyniad a wnaed ganddynt. Mae'r ddogfen atodol hon hefyd yn crynhoi ein hasesiad o'r gwaith a gynhaliwyd gan Westinghouse er mwyn ymdrin â Materion GDA eraill ym maes diogelwch, a godwyd gan y Swyddfa Reoliadau Niwclear (ONR), ac rydym wedi cael gwybod eu penderfyniad terfynol.

Newidiadau i'r cyflwyniad

Cyhoeddodd Westinghouse ei gyflwyniad ar ei wefan yn 2011

(<http://www.westinghousenuclear.com/uknuclear/Documentation>) gan wahodd sylwadau gan bobl.

Mae Westinghouse wedi adolygu'r cyflwyniad i adlewyrchu datblygiadau ac i ddatrys y Materion GDA. Mae'r cyflwyniad yn cynnwys adroddiad amgylcheddol ynghyd â dogfennau cefnogi. Nid yw'r newidiadau a wnaed yn addasu ein hasesiad a chanlyniadau blaenorol ni. Serch hynny, mae'r newidiadau wedi peri i ni wneud mân newidiadau ac egluron i nifer fechan o baragraffau yn ein dogfen benderfynu a'r adroddiadau asesu terfynol; amlinellir y rhain yn Atodiad 2 yr atodiad. Rydym ni'n ystyried nad yw'r newidiadau mor arwyddocaol nes peri fod angen ailgyhoeddi dogfennau diwygiedig. Bellach, dylid darllen y dogfennau a gyhoeddwyd gennym ni yn 2011 gan gynnwys y newidiadau a restrir yn Atodiad 2 yr atodiad.

Wrth adolygu'r wybodaeth ychwanegol a ddarparwyd gan Westinghouse mewn ymateb i'r Materion GDA, fe fu i ni ystyried a oedd angen ymgynghori pellach er mwyn ychwanegu at ein dealltwriaeth wrth asesu. Rydym wedi dod i'r casgliad nad yw'r wybodaeth ychwanegol a dderbyniwyd, a'i goblygiadau, yn ddigon arwyddocaol nes peri fod angen ymgynghoriad pellach cyn cyhoeddi SoDA llawn ar gyfer cynllun yr AP1000®.

Materion GDA a godwyd gan y Swyddfa dros Reoli Niwclear

Yn ogystal, cododd y Swyddfa dros Reoli Niwclear (ONR) 49 o Faterion GDA yn ymwneud â diogelwch yn ogystal â'r 2 a gyhoeddwyd gennym ni ar y cyd â nhw. Fe fu i ni adolygu'r wybodaeth a ddarparwyd gan Westinghouse mewn ymateb i'r Materion GDA hyn ac adroddiadau asesu ONR i weld a oedd unrhyw ddarpar effaith sylweddol ar faterion amgylcheddol neu ar ein penderfyniad blaenorol. Ein casgliad yw nad yw'r wybodaeth ychwanegol a ddarparwyd yn newid y casgliadau na chanfyddiadau'r asesiadau yn ein dogfen benderfynu flaenorol.

Mae ONR hefyd wedi casglu eu bod yn fodlon â'r cynllun a'r achosion diogelwch a gyflwynwyd gan Westinghouse ar gyfer adweithydd AP1000®, ac mae wedi cyhoeddi Cadarnhad o Dderbyn Cynllun (DAC). Gellir cael rhagor o wybodaeth am asesiad yr ONR yma:
<http://www.onr.org.uk/new-reactors/ap1000/reports.htm>.

Canfyddiadau asesu pellach

Ni all GDA ddarparu asesiad cyflawn o gynllun terfynol yr adweithydd. Bydd materion eraill yn ymwneud â'r gweithredwr penodol neu'r safle a ystyrir yn ystod camau'r trwyddedu amgylcheddol a thrwyddedu'r safle. Bu i ni godi 12 canfyddiad asesu yn nogfen benderfynu 2011.

Byddem ni'n disgwyl i weithredwr / drwyddedai yn y dyfodol ymwneud â'r canfyddiadau hyn yn ystod camau cynllunio manwl caffael adeiladu, comisiynu neu ddechrau gweithredu prosiect adeiladu newydd. O ganlyniad i'n hasesiad o ymateb Westinghouse i'r Materion GDA, gan gynnwys y rheini a godwyd gan yr ONR, rydym wedi codi 6 canfyddiad asesu pellach. Amlinellir y canfyddiadau asesu yn Atodiad 3 yr atodiad.

Ein penderfyniad

Rydym wedi cwblhau asesiad manwl o gyflwyniad GDA Westinghouse ar gyfer cynllun atomfa'r AP1000® gan gynnwys yr ymateb i'r Materion GDA a adwaenwyd gennym yn ein dogfen benderfynu o fis Rhagfyr 2011. Y casgliad a ddown iddo yw y byddai agweddau amgylcheddol y cynllun yn cwrdd â'r safonau uchel a ddisgwylir gennym, ac rydym wedi penderfynu cyhoeddi Datganiad Cynllun Derbyniol (SoDA) ar gyfer y cynllun.

Y camau nesaf

Bydd cynllun manwl adweithydd yr AP1000® a'r achosion diogelwch ac amgylcheddol sy'n ei gefnogi yn esblygu os bydd gweithredwyr yn cyflwyno cynigion ar gyfer safleoedd penodol. Rydym ni'n disgwyl y byddai'r cynlluniau ar gyfer adweithyddion a gyflwynir i'r GDA a'r Datganiad Cynllun Derbyniol yn cael eu defnyddio i gefnogi'r caniatâd amrywiol sydd ei angen i adeiladu adweithyddion ar gynllun yr AP1000® sydd i bob pwrpas union yr un fath, oni bai am ofynion penodol ar rai safleoedd a dewisiadau'r gweithredwr.

Nid yw ein Datganiad Cynllun Derbyniol na Chadarnhad Derbyn Cynllun yr ONR ynddyn nhw'u hunain yn caniatáu i'r gwaith o adeiladu gorsaf niwclear fynd yn ei flaen. Mae angen Gorchymyn Caniatáu Datblygu oddi wrth Ysgrifennydd Gwladol yr Adran Fusnes, Menter a Strategaeth Ddiwydiannol, ynghyd â thrwydded safle niwclear oddi wrth y Swyddfa dros Reoli Niwclear.

Mae'r SoDA mewn grym am 10 mlynedd o'r dyddiad cyhoeddi, ac wedi hynny bydd angen adolygu ac ailasesu cynllun yr AP1000®

**Would you like to find out more about us
or about your environment?**

Then call us on

03708 506 506 (Monday to Friday, 8am to 6pm)

email

enquiries@environment-agency.gov.uk

or visit our website

incident hotline 0800 807060 (24 hours)

floodline 0345 988 1188 (24 hours)

Find out about call charges: www.gov.uk/call-charges



Environment first: Are you viewing this on screen? Please consider the environment and only print if absolutely necessary. If you are reading a paper copy, please don't forget to reuse and recycle if possible.



Assessing new nuclear power station designs

Generic design assessment of Westinghouse Electric Company LLC's AP1000[®] nuclear power station design

Supplement to the decision document

Summary

30th March 2017

We are the Environment Agency. We protect and improve the environment. Acting to reduce the impacts of a changing climate on people and wildlife is at the heart of everything we do.

We reduce the risks to people, properties and businesses from flooding and coastal erosion.

We protect and improve the quality of water, making sure there is enough for people, businesses, agriculture and the environment. Our work helps to ensure people can enjoy the water environment through angling and navigation.

We look after land quality, promote sustainable land management and help protect and enhance wildlife habitats. And we work closely with businesses to help them comply with environmental regulations.

We can't do this alone. We work with government, local councils, businesses, civil society groups and communities to make our environment a better place for people and wildlife.

Natural Resources Wales is the largest Welsh government sponsored body, employing 1,900 staff across Wales. We were formed in April 2013, largely taking over the work of the Countryside Council for Wales, Forestry Commission Wales and the Environment Agency in Wales, as well as certain Welsh government functions. The work we do makes sure that the environment and natural resources of Wales are sustainably maintained, enhanced and used, both now and in the future.

Published by:

Environment Agency
Horizon House, Deanery Road,
Bristol BS1 5AH
Email: enquiries@environment-agency.gov.uk
www.gov.uk/environment-agency

Further copies of this report are available from our publications catalogue: www.gov.uk/government/publications

or our National Customer Contact Centre:
T: 03708 506506

Email: enquiries@environment-agency.gov.uk.

© Environment Agency 2017

All rights reserved. This document may be reproduced with prior permission of the Environment Agency.

Our role

As the environmental regulators for the nuclear industry in England (Environment Agency) and Wales (Natural Resources Wales), our role is to regulate discharges and waste disposals from nuclear power stations and to make sure 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.

Westinghouse Electric Company LLC (Westinghouse) submitted its AP1000[®] nuclear power plant design to us for assessment in August 2007. In 2011, we issued an interim Statement of Design Acceptability (iSoDA) for the AP1000[®] 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 this supplement to the 2011 decision document that explains developments since 2011 and why we are now 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 learned for site-specific applications.

Through the GDA approach, we work closely with the Office for Nuclear Regulation (ONR), the UK regulator for nuclear safety and security to make sure any new nuclear power stations built in the UK meet the highest standards of safety, security, environmental protection and waste management, and provide greater protection for both people and the environment.

Our 2011 decision

By issuing an iSoDA for the AP1000[®] design, we confirmed 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-UKAP1000-CC-02](#): "PCSR to Support GDA" - to provide a consolidated final GDA submission, including agreed design changes for the AP1000[®] reactor.
- [GI-UKAP1000-CC-03](#): "Consider and action plans to address the lessons learnt from the Fukushima Event" - to demonstrate how Westinghouse has taken account of the lessons learnt from the unprecedented events at Fukushima.

Our decision document set out our detailed assessment of environmental aspects of the UK AP1000[®] 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 Westinghouse to show how it would address them, and since December 2011, we have been assessing the further information Westinghouse provided. We are satisfied that Westinghouse has now fully resolved the two GDA Issues, and we are issuing a full SoDA.

This supplement to our 2011 decision document summarises our assessment of Westinghouse's response to the GDA Issues, and details the changes to its submission. This supplementary document also summarises our assessment of the work Westinghouse has carried out to address other safety related GDA Issues the Office for Nuclear Regulation (ONR) raised, where it has informed our final decision.

Changes to the submission

Westinghouse published its submission on its website in 2011 (<http://www.westinghousenuclear.com/uknuclear/Documentation>) and invited people to comment.

Westinghouse has revised its submission to reflect developments and to resolve the GDA Issues. The submission includes an environment report with supporting documents. The changes made do not modify our previous assessment and conclusions. However, the changes have led us to make minor amendments and clarifications to a small number of paragraphs in our decision document and final assessment reports; these are set out in Appendix 2 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 Appendix 2 of the supplement.

When reviewing the additional information provided by Westinghouse in response to the GDA Issues, we considered whether further consultation was necessary to help inform our assessments. We have concluded that the additional information received and its implications are not significant such that further consultation is required prior to issuing a full SoDA for the AP1000[®] design.

GDA Issues raised by the Office for Nuclear Regulation

The Office for Nuclear Regulation (ONR) also raised 49 safety related GDA Issues as well as the 2 we issued together with them. We reviewed the information Westinghouse provided in response to these GDA Issues and ONR's assessment reports to see if there was any potentially significant impact on environmental matters or on our earlier decision. We conclude that the additional information provided does not change the conclusions or assessment findings in our earlier decision document.

ONR has also concluded that it is satisfied with the design and safety cases Westinghouse presented for the AP1000[®] reactor, and has issued a Design Acceptance Confirmation (DAC). Further information on the ONR assessment is available at: <http://www.onr.org.uk/new-reactors/ap1000/reports.htm>.

Further assessment findings

GDA cannot provide a complete assessment of the final reactor design. There will be other issues relating to the specific operator or site that will be considered during the environmental permitting and site licensing stages. We raised 12 assessment findings in the 2011 decision document.

We would expect a future operator/ licensee to address these findings during the detailed design, procurement, construction, commissioning or early operational phases of a new build project. As a result of our assessment of Westinghouse's response to the GDA Issues, including those raised by ONR, we have raised 6 further assessment findings. The assessment findings are set out in Appendix 3 of the supplement.

Our decision

We have completed a detailed assessment of Westinghouse's GDA submission for the AP1000[®] nuclear power plant design, including the response to the GDA Issues that we identified in our December 2011 decision document. We conclude that the environmental aspects of the design would meet the high standards we expect, and have decided to issue a Statement of Design Acceptability (SoDA) for the design.

Next steps

The detailed design of the AP1000[®] reactor and the safety and environment cases that support it will evolve if operators take forward proposals for specific sites. We expect that the reactor design submitted for GDA and the statement of design acceptability would be used to support the permissions to build reactors of the AP1000[®] design that are more or less identical, apart from specific requirements for certain sites and operator choices.

Our Statement of Design Acceptability and ONR's Design Acceptance Confirmation alone do not allow the construction of a nuclear power station to go ahead. That needs a Development Consent Order from the Department of Business, Enterprise and Industrial Strategy's Secretary of State, and a nuclear site licence from the Office for Nuclear Regulation.

The SoDA is valid for 10 years from the date of issue, after which time the AP1000[®] design needs to be reviewed and reassessed

**Would you like to find out more about us
or about your environment?**

Then call us on

03708 506 506 (Monday to Friday, 8am to 6pm)

email

enquiries@environment-agency.gov.uk

or visit our website

incident hotline 0800 807060 (24 hours)

floodline 0345 988 1188 (24 hours)

Find out about call charges: www.gov.uk/call-charges



Environment first: Are you viewing this on screen? Please consider the environment and only print if absolutely necessary. If you are reading a paper copy, please don't forget to reuse and recycle if possible.