

NOT PROTECTIVELY MARKED

Office for Nuclear Regulation

An agency of HSE

Hinkley Point C: Site Evaluation (Demographics)

Addendum to Report ONR-DP-AR-12-005

(TRIM Record 2013/0059559)

Assessment Report: ONR-DEF-AR-12-067


07 February 2013

NOT PROTECTIVELY MARKED

NOT PROTECTIVELY MARKED

Office for Nuclear Regulation

An agency of HSE

Document Title

Title:	Hinkley Point C: Site Evaluation (Demographics) Addendum to Report ONR-DP-AR-12-005
Project:	Site Evaluation (Demographics) – Hinkley Point C

Document Identifier

Identifier	Revision	TRIM Reference(s)
ONR-DEF-AR-12-067	0	2013/0059595

Document Acceptance

Role	Name	Position	Signature	Date
Author	[REDACTED]	HM Principal Inspector	[REDACTED]	07/02/2013
Peer Review	[REDACTED]	HM Superintending Inspector	[REDACTED]	13/02/2013
Acceptance	[REDACTED]	HM Superintending Inspector	[REDACTED]	20/02/2013

Revision History

Revision	Date	Author(s)	Reviewed By	Accepted By	Description Of Change
0	07 February 2013	[REDACTED]			

Circulation (latest issue)

Organisation	Name

NOT PROTECTIVELY MARKED

Hinkley Point C: Site Evaluation (Demographics)

(Addendum to Report ONR-DP-AR-12-005)

EXECUTIVE SUMMARY

The site specific evaluation of those attributes relating to demographics of the Hinkley Point C nominated site was reported in ONR-DP-AR-12-005. Site characteristics were based on an assessment against the remote site model test criteria presented in ONR-DP-AR-12-003. Subsequent to the issue of the foregoing reports, in a letter dated 29 October 2012, the Department of Energy and Climate Change (DECC) confirmed the UK Government's policy on the siting of new nuclear power stations as this relates to the consideration of demographics.

DECC's letter of 29 October 2012 confirmed that:

For the purpose of the Strategic Siting Assessment process, the Government will use semi-urban siting criteria ...

This Addendum provides the rationale and technical basis for the advice on the subject of demographics previously given to DECC (formerly BERR in 2008), and serves to:[†]

- (a) record UK Government siting policy,
- (b) record the demographic assessment test criteria, and
- (c) confirm that the Hinkley Point C nominated site meets the semi-urban reference density test criteria.

[†] Department for Business Enterprise and Regulatory Reform (BERR)

Table of Contents

	Page
1. Introduction	3
2. Historical Context	3
3. DECC Statement on Siting Policy	6
4. Conclusions and Recommendations	7
Figure 1 HSE (2006) Safety Assessment Principles (Target 8) Frequency-Consequence Curve for Accidents on an Individual Facility.	8
Figure 2 Benchmark representing the standard to be met by new plant.	9
Figure 3 Strategic Siting Assessment (Demographic Criteria).	9
Appendix A Strategic Siting Assessment (SSA). Extract from HSE Web Site: Nuclear New Build, 1 July 2008.	10
Appendix B Towards a Nuclear National Policy Statement: Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK, Department for Business Enterprise and Regulatory Reform, July 2008, URN 08/925. Extracts from: (pp.58-59, Sections 2.81-2.92).	13
Appendix C Hansard (1973), Written Answers, 5 December 1973, v865, cc405-406. Parliamentary Question by Mr David Price to Mr Emery, Secretary of State for Trade and Industry.	19
Appendix D Nuclear New Build: DECC Statement on Siting Policy, letter 29 October 2012, Department of Energy and Climate Change	21

1. INTRODUCTION

1. ONR's assessment of the site specific evaluation of those attributes relating to demographics of the Hinkley Point C nominated site was reported in September 2012. ONR's interpretation of the Hansard (1988) remote site model and methodology for demographic assessment was presented in ONR-DP-AR-12-003. The companion report, ONR-DP-AR-12-005, presented the analysis of the demographics for the Hinkley Point C nominated site. This latter report was based on an assessment against the remote site model criteria.
2. Subsequent to the issue of the foregoing reports, in a letter dated 29 October 2012, the Department of Energy and Climate Change (DECC) confirmed the UK Government's policy on the siting of new nuclear power stations as this relates to the consideration of demographics. This letter confirmed the Government's January 2009 'Response to consultation on Strategic Siting Assessment Process' that 'For the purpose of the Strategic Siting Assessment process, the Government will use Semi-urban siting criteria ...'. This report has therefore, been produced to: (i) record UK Government siting policy, (ii) record the demographic assessment criteria, and (iii) confirm that the Hinkley Point C nominated site meets the 'semi-urban' criteria.
3. The first section of this report presents the historical context and explains why the demographic evaluation, reported in ONR-DP-AR-12-005, undertook assessment against the remote site model criteria. For evaluation purposes and for completeness, Section 2 also compares population density assessment criteria for a remote site (developed in ONR report ONR-DP-AR-12-003) with semi-urban site criteria (note the semi-urban criteria is not recorded in earlier reports). Section 3 presents the DECC statement on Government siting policy. The following sections provides the rationale and technical basis for the advice previously given on the subject of demographics.

2. HISTORICAL CONTEXT

4. The publication of the Nuclear National Policy Statement (NNPS) by the Department of Energy and Climate Change (DECC) in July 2011, marked the culmination of the Strategic Siting Assessment (SSA) process. The NNPS made reference to a longstanding Government policy regarding local demographics:

The Government has a longstanding policy regarding local demographics which would limit the radiological consequences to the public in the unlikely event of an accident involving the spread of radioactive materials beyond the site boundary. This policy is a measure of prudence over and above the stringent regulatory requirements imposed on nuclear operators in order to prevent such accidents.

DECC (2011: v2, p266), July 2011.

5. Prior to the launch of the Government consultation in 2008, by the then Department for Business Enterprise and Regulatory Reform (BERR) on the SSA process, BERR sought the
-

views of the Nuclear Installations Inspectorate (NII) on the suitability of the existing Government siting policy (Appendix A herein refers).

6. Drawing on the results of a review of siting policy by NII, which was subsequently presented to the Nuclear Safety Advisory Committee (NuSAC) in July 2008, NII advised BERR that:

- *It was not necessary to apply the existing, restrictive ‘remote siting criterion’ to any of the designs that are currently being subject to Generic Design Assessment or any other advanced reactor designs that we (NII) consider are likely to be submitted for construction in the UK, but that;*
- *The Government should retain the existing ‘semi-urban siting criterion’ as an upper bound restraint on the population density around any site proposed for the construction of new nuclear facilities.*

7. In the submissions and presentation to NuSAC in July 2008, NII proposed the following three reference density limits: ¹

	30° Sector Reference Density Limits		Site Reference Density Limits	
	Persons per square kilometre	Persons per square mile	Persons per square kilometre	Persons per square mile
Remote Site	1,000	2,590	250	647
New Build NPP Site ¹	1,667	4,317	417	1,079
Semi-Urban Site	5,000	12,950	1,250	3,237

Table (i)

8. The reference density limit proposed for the new build NPP sites in Table (i) above, was a relaxation of the remote site limit previously published in Hansard (1988), and represented ‘inclusionary test criteria’ for all designs of third generation light water reactors (LWRs) licensable in the UK.

9. For those nominated sites which failed to satisfy the ‘new build inclusionary criteria’ test, the selection of an apposite reference density capped at the semi-urban exclusionary limit, was contingent on a design specific demonstration of the degree of compliance with Target 8 in HSE’s Safety Assessment Principles, Figure 1. For this purpose, the new build NPP reference density limit in Table (i) was assumed to have correspondence with the dashed line shown in Figure 2, representing the benchmark to be met by new build LWRs.

10. In the presentation to NuSAC, the semi-urban site and remote site limits were retained as upper and lower bound population reference density limits respectively, as illustrated by the

¹ NuSAC(2008)P12 and Addendum: For new build NPP sites, the reference density associated with a 30° sector was based on one-third of the semi-urban reference density limit as presented previously to ACSNI in ACSNI(88)P5.

schematic in Figure 3. It was proposed that the two bounding reference density limits had correspondence with the BSO and BSL in Figures 1 and 2 as follows:

BSO: Semi-urban reference density

BSL: Remote site reference density

11. The Hansard (1988) remote site limits were recast in the form given in Table (i) above, and represented ‘inclusionary test criteria’ for all designs of reactor and non-reactor nuclear facilities (NNFs) licensable in the UK.¹

12. The foregoing proposals to NuSAC were reflected in the SSA consultation document published by BERR in 2008, (Appendix B herein refers):²

2.88 ... the Government considers that it is no longer necessary to apply the Remote siting criterion to designs such as the modern designs of reactors in the GDA, and that such a precautionary policy does not need to be applied for future siting of international modern designs.

2.92 The Government proposes that areas that meet the Semi-Urban and Remote criteria will, for the purposes of the SSA, be considered strategically suitable for the development of new nuclear power stations, subject to meeting all other relevant criteria. It should be noted that although a site may have demographic features which fall below the SSA exclusionary criteria, this does not mean that the demographic features will be acceptable to the NII following its detailed regulatory assessment at the time of considering a nuclear site licence application.

BERR (July 2008, pp.58-59)

13. The policy guidance provided in Section 2.92 quoted above, has correspondence with the following extract from 1973 Ministerial Statement on siting policy by the then Secretary of State for Trade and Industry, (Appendix C herein refers):

... Sites like those used for the earlier Magnox stations would be suitable for any reactor system I would licence and relaxation to sites nearer to centres of population would depend on relevant experience.

Hansard (1973), 5 December 1973, Written Answers.

14. Since NuSAC’s term of office expired on 31 October 2008, the above demographic model proposed by NII for new build NPPs in the United Kingdom, has not been pursued to a

¹ Hansard (1988) Written Answers, 11 March 1988, v129, cc358-360. See also Highton (2012: Appendix B), The Interpretation of the Hansard (1988) Remote Site Model for Application to the Hinkley Point C Nominated Site, Assessment Report: ONR-DP-AR-12-003. TRIM Ref: 2013/0059528.

² BERR (2008) Towards a Nuclear National Policy Statement: Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK. TRIM Ref: 2012/422064

conclusion. The foregoing does however, provide the background, rationale and technical basis for the advice on the subject of demographics, given to BERR and reflected in the July 2008 consultation document and serves to partly satisfy the following commitment:

17.17 ... Further work is being carried out to provide the technical basis for site specific demographic assessment to support consent applications submitted to the Infrastructure Planning Commission.

*DECC (2010: p.147)*¹

15. Consequently, for the site specific evaluation of those attributes relating to demographics of the Hinkley Point C nominated site, a conservative approach was adopted and recourse was made to the policy guidance presented in Section 2.92 of the BERR (2008) consultation document, and the 1973 Ministerial Statement in Hansard. Since the Hinkley Point C nominated site passed the stringent test represented by the 'remote site inclusionary criteria' no further work was deemed necessary to support licensing.

3. DECC STATEMENT ON SITING POLICY

16. This Statement has been produced by the Department of Energy and Climate Change (DECC) in response to a request from ONR seeking further clarification on Government siting policy for new build NPPs in the United Kingdom. The DECC Statement has been reproduced in Appendix D herein, for immediate reference.

17. With regard to new build NPPs, the following extracts from the DECC Statement in Appendix D should be noted:

- Documents published between 2007 and 2011 as part of the Strategic Siting Assessment and National Policy Statement process (listed in Appendix D), set out the Government policy that new nuclear power stations can be sited in semi-urban areas. This policy was intended to replace, as far as new nuclear power stations are concerned, any previous requirement that nuclear power stations need to be sited in remote areas.
- Any published statement about Government siting policy for new nuclear power stations should follow the above lines and cite earlier policies only in a historic context.
- The policy does not, however, replace the need for detailed examination by ONR of any proposal to build a new nuclear power station and specifically of demographic criteria. In particular, ONR might following detailed examination reject an application for a site licence for a site included in the NPS; on demographic (or other) grounds.

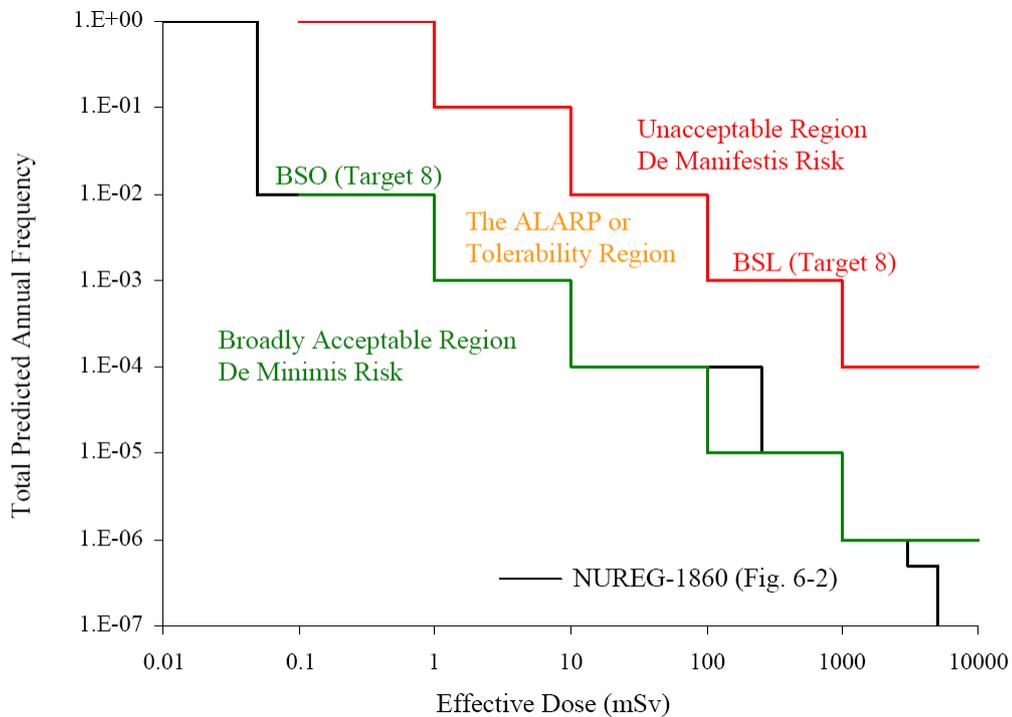
¹ DECC (2010) The United Kingdom's Fifth National Report on Compliance with the Convention on Nuclear Safety Obligations, October 2010.

- Paragraph 2.88 of the 2008 consultation document referred to in the Annex says “*Government considers that it is no longer necessary to apply the Remote siting criterion to designs such as the modern designs of reactors in the GDA, and that such a precautionary policy does not need to be applied for future siting of international modern designs*”. The intention is that the policy should apply to any design brought forward for development consent by a credible nuclear operator, subject to detailed regulatory examination.

4. CONCLUSIONS AND RECOMMENDATIONS

18. The conclusions and recommendations are:

- (a) The siting policy statements in the Assessment Report describing the site specific evaluation of those attributes relating to demographics of the Hinkley Point C nominated site, should be viewed in the light of the DECC Statement on siting policy for new build NPPs in the United Kingdom.
- (b) The demographic analysis reported in ONR-DP-AR-12-005, for the projected populations distributions out to 30km from the Hinkley Point C nominated site, remains within the semi-urban criteria presented in Table (i) of this report.
- (c) Documents published between 2007 and 2011 as part of the Strategic Siting Assessment and National Policy Statement process (listed in Appendix D), set out the Government policy that new nuclear power stations can be sited in semi-urban areas. This policy was intended to replace, as far as new nuclear power stations are concerned, any previous requirement that nuclear power stations need to be sited in remote areas.
- (d) It is concluded therefore, that no issues have been identified in the course of this assessment of those aspects of site evaluation relating to demographics, which would give rise to concerns for granting a nuclear site licence for the Hinkley Point C nominated site.

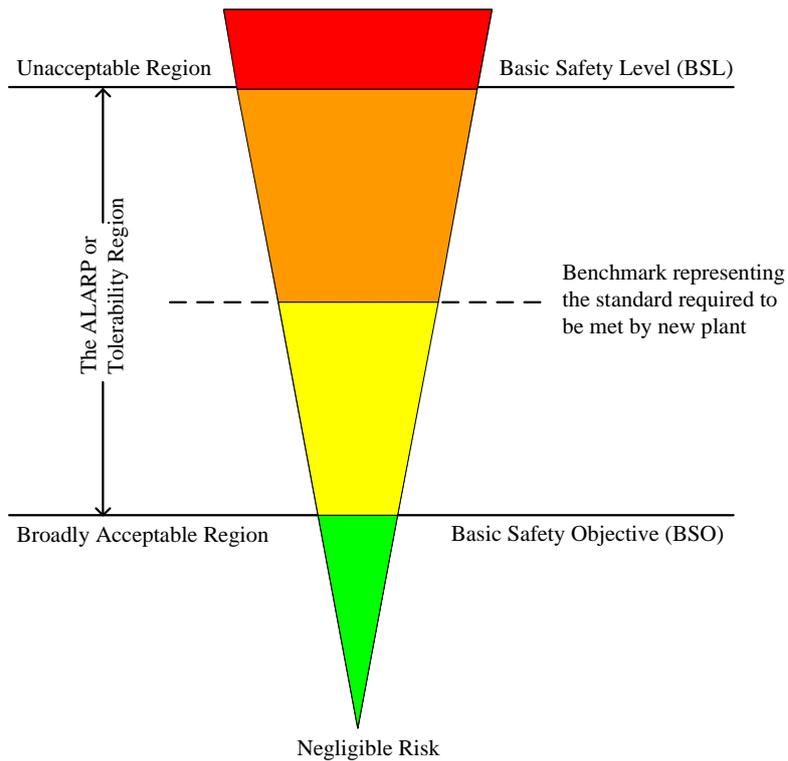


Source: Refs 1, 2, 3 and 4 †

Figure 1: HSE (2006) Safety Assessment Principles (Target 8) Frequency-Consequence Curve for Accidents on an Individual Facility†

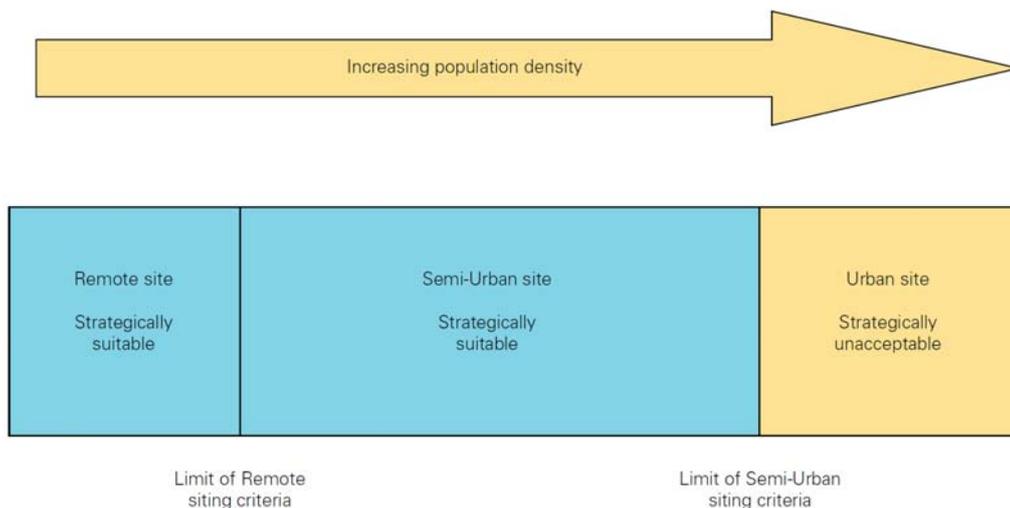
† **Source References:**

1. HSE (2006) Numerical Targets and Legal Limits in Safety Assessment principles for Nuclear Facilities: An Explanatory Note, December 2006.
2. HSE (2006) Safety Assessment Principles for Nuclear Facilities.
3. US NRC (2007) Feasibility Study for a Risk-Informed and Performance-Based Regulatory Structure for Future Plant Licensing, NUREG-1860, Vols. 1 and 2, December 2007.
4. Kju-Myeng OH, Sang-Kyu Ahn, Won-Hyo Yoon, Hoon-Joo Lee, The Comparison of Frequency-Consequence (F-C) Criteria in Evaluating the Risk of New or Existing Reactor, Proceedings of International Congress on Advances in Nuclear Power Plants (ICAPP '08) , Anaheim, CA USA, June 8-12, 2008, Paper 8370.
5. Mary Drouin, John Lehner, Vinod Mubayi and Tom King: Feasibility study regarding probabilistic approach for licensing of advanced reactors, paper presented to ANS PSA (2008).
6. Kju-Myeng Oh, Sang-Kyu Ahn, Chang-Ju Lee and Hoon-Joo Lee: Method on selection of frequency-consequence criteria in risk assessment, paper presented to ANS PSA (2008).
7. ANS PSA (2008), Challenges to PSA during the Nuclear Renaissance, International Topical Meeting on Probabilistic Safety Assessment and Analysis, Knoxville, Tennessee, 7-11 September 2008, American Nuclear Society, LaGrange Park, IL.



Source: Tolerability of Risk, HSE (1992, Fig.4, p.9)

Figure 2: Benchmark representing the standard to be met by new plant.



Source: Consultation Document, BERR (July 2008: Fig.3, p.59)

Figure 3: Strategic Siting Assessment (Demographic Criteria).

APPENDIX A

STRATEGIC SITING ASSESSMENT (SSA)

Extract from HSE Web Site: Nuclear New Build[†]

July 1, 2008

[†] Strategic Siting Assessment <http://news.hse.gov.uk/onr/2008/07/strategic-siting-assessment-ssa/> TRIM Ref: 2012/0424376

Strategic Siting Assessment (SSA)

Date:

July 1, 2008 – 2:30 pm



The Department for Business, Enterprise and Regulatory Reform (BERR) has recently launched a Government consultation on a process for determining the strategic suitability of sites that may be proposed for the construction of new nuclear power stations.

- [BERR: A Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK: July 2008](#)

[1]

One important factor affecting whether a potential site is suitable for a new power station is the density and distribution of the nearby population, and BERR has been developing proposals for this 'demographic criterion'. Recently, BERR sought the views of HSE's Nuclear Installations Inspectorate (NII) on the suitability of the existing Government reactor siting policy which had been set out in a statement to Parliament in 1988. In providing its views to BERR, NII was able to draw on the results of a recent review which it had undertaken into its regulatory approach both to the siting of any new nuclear facility and to providing advice to local planning authorities regarding developments in the vicinity of existing nuclear licensed sites. NII advised BERR that in the light of worldwide experience in nuclear reactor operation, and allowing credit to be taken for robust safety features which are available in modern nuclear plant design:

- It was not necessary to apply the existing, restrictive 'remote siting criterion' to any of the designs that are currently being subject to Generic Design Assessment or any other advanced reactor designs that we consider are likely to be submitted for construction in the UK, but that;
- The Government should retain the existing 'semi-urban siting criterion' as an upper bound restraint on the population density around any site proposed for the construction of new nuclear facilities.

In practice, however, the acceptability of any new build proposal would not be decided until NII has been able to consider the detailed design proposal and to assess the site-specific safety case.

NII siting policy review

NII has recently reviewed its regulatory approach both to the siting of any new nuclear facility and to providing advice to local planning authorities regarding developments in the vicinity of existing nuclear licensed sites. This has led us to adopt a goal-setting approach based upon the demonstration of achieving the risk targets specified within the HSE Safety Assessment Principles (SAPs). For new installations, including new reactors, this approach would be applied by NII once details of the proposed installation and its safety case had been submitted as part of a nuclear site licence application. Technical details of NII's revised approach were given in a presentation by NII to the July 2008 meeting of HSE's independent Nuclear Safety Advisory Committee (NuSAC). Because of the technical nature of the papers presented to NuSAC, NII intends shortly to describe its revised approach in a set of more accessible documents suitable for both the general public and for more specialist audiences.

Broadly, NII's review recommends a two step process:

Step 1: Generic Screening: A design independent screening process to determine whether a site is automatically excluded (because the near site population density is too high), or included as a potentially suitable site. Where appropriate, this will take account of any relevant SSA assessment that the Government may have already undertaken for that site.

Step 2: Site and Design Specific For sites where Step 1 has identified them as potentially suitable, the viability of the site will be determined on the basis of the risk presented to persons off the site compared with the risk targets that NII applies in its SAPs. This assessment will be undertaken by NII specialists, taking fully into account the degree to which the application has demonstrated that the risk is both compliant with the risk targets in the SAPs and is as low as reasonably practicable.

In practice, if a design is shown to present a risk which is well below the NII's risk target, then demographic restrictions are unlikely to be a factor in its siting – providing the population density is no higher than the recommended exclusionary limit (the "semi-urban" siting criterion).

The technical papers describing NII's siting review and the NII presentation to the July 2008 NuSAC meeting are available on the NuSAC webpage:

- [NuSAC: The Siting of Nuclear Installations In the UK, NuSAC\(2008\) P12 and addendum, plus the associated NII presentation to the committee](#)

[2]

Category

Nuclear new build.

Link URLs in this page

1. BERR: A Consultation on the Strategic Siting Assessment Process and Siting Criteria for New Nuclear Power Stations in the UK: July 2008
<http://www.berr.gov.uk/energy/nuclear-whitepaper/consultations/page44523.html#criteria>
2. NuSAC: The Siting of Nuclear Installations In the UK, NuSAC(2008) P12 and addendum, plus the associated NII presentation to the committee
<http://www.hse.gov.uk/aboutus/meetings/iacs/nusac/index.htm>

APPENDIX B

Extracts from:

(pp.58-59, Sections 2.81-2.92)

TOWARDS A NUCLEAR NATIONAL POLICY STATEMENT[†]

Consultation on the Strategic Siting Assessment Process and Siting Criteria
for New Nuclear Power Stations in the UK

Department for Business Enterprise and Regulatory Reform
July 2008, URN 08/925

[†] <http://webarchive.nationalarchives.gov.uk/+/http://www.berr.gov.uk/files/file47136.pdf> TRIM Ref: 2012/0422064

Proximity to mining, drilling and other underground activities – flag for local consideration 1.9

- 2.78** Mining, drilling and other underground activities can pose a number of risks to nearby nuclear power stations. The planning process will need to assess these risks. The activities that can cause potential risks include:
- Mineral and aggregate extraction from open gravel and claypits which have been restored with inert and/or hazardous waste materials, aggregate and building-stone quarries, and open-cast coal and ironstone workings.
 - Mineral and aggregate extraction from underground mines, including shafts and galleries from the mining of, for example, ores (such as tin, lead, zinc), coal, ironstone, limestone, gypsum and rock salt.
 - Mineral, hydrocarbon and water extraction from boreholes such as cavities and ground settlement from extraction of gas, oil, water, gypsum and rock salt.
 - Waste tips, for example from mines, quarries and industrial and domestic sources.
- 2.79** When building near or upon any of these sites, the potential for collapse, subsidence or uplift of the site surface needs to be evaluated. If this evaluation shows that this activity could affect the safety of a nuclear installation, then practicable engineering solutions will need to be implemented. Full and proper assessment of any prospective sites will require site- and design-specific investigations.
- 2.80** **Building new nuclear power stations near to mining, drilling and other underground activities poses numerous risks. There will have to be a full evaluation of these issues at a local level. While the SSA will not include this issue as an exclusionary or discretionary criterion, it is specifically noted as an important local consideration for the detailed site-specific investigations and planning and regulatory assessment.**

Demographics – exclusionary criterion 1.10

- 2.81** The Government has a longstanding policy regarding local demographics which would limit the radiological consequences to the public in the unlikely event of a serious nuclear accident. This policy is a measure of prudence over and above the stringent regulatory requirements imposed on nuclear operators to prevent such accidents.

- 2.82** The HSE, through the NII and on behalf of the Secretary of State for Business, Enterprise and Regulatory Reform, administers the Government's policy on the control of population around licensed nuclear sites. The NII fulfils this function by advising planning authorities whether proposed developments near to nuclear facilities are consistent with Government policy. Planning authorities take this advice into account in considering whether or not to approve planning applications.
- 2.83** The acceptability of the UK's existing nuclear power station sites was determined by reference to two sets of demographic criteria relating to Magnox power stations and to the Advanced Gas-cooled Reactor (AGR) stations. The siting criteria for Magnox and AGR nuclear power stations are commonly termed "Remote" and "Semi-Urban" siting criteria respectively. Remote sites have a much lower allowable population density than the semi-urban sites and are those sites where the UK's 'first generation' Magnox reactors were conservatively sited. Box 1 sets out existing policy on the Remote and Semi-Urban siting criteria.
- 2.84** The criteria include weighting factors to determine the acceptable population limits in sectors around the site. The weighting factors take account of the fact that local weather patterns will influence the dispersal of radioactive material around the site. Although primarily intended to allow the NII to influence planning decisions in the vicinity of existing nuclear power stations, these criteria can also be used to inform decisions regarding the suitability of sites for installing new nuclear power stations. This approach to determining site suitability was examined in the 1980s in the public inquiries into Sizewell B and Hinkley Point C.
- 2.85** In parallel with the Government's facilitative actions in relation to new nuclear power, the NII has been reviewing its approach to providing advice on population limits around nuclear sites to ensure that the approach is appropriate to different types of nuclear facilities including modern reactors such as those being considered in the GDA.

Box 1 – Hansard (1988) Demographic siting criteria

Mr Michael Spicer

I am advised by the HSE’s Nuclear Installations Inspectorate that the current demographic criteria for assessing potential AGR sites were developed in the late 1960s. These and more restrictive criteria of a similar type are used as guidelines for controlling development in the vicinity of existing AGR and Magnox stations respectively. Once a site has been accepted for a nuclear station arrangements are made to ensure that residential and industrial developments are so controlled that the general characteristics of the site are preserved, and therefore local authorities consult the inspectorate with regard to any proposed development which might lead to an increase in population close to the site and on larger developments further from the site. Limiting criteria based upon population distribution are used only for guidance and the inspectorate would not necessarily insist on rigid adherence to them. Other unquantifiable factors are also taken into account.

The limiting criteria are in the form of cumulative weighted population out to various distances all around the site and in any 30 deg. sector. To assess a site against the criteria at a certain distance, the population for a given distance band is multiplied by the appropriate weighting factor and the values up to the distance being evaluated are added together. The weighting factors and limiting criteria for Magnox and AGR sites are:

Distance (km)	Weighting Factor	Cumulative Weighted Population Criteria	
		Magnox	AGR
Population all around site			
0-2	32.0	45,000	290,000
2-3	15.0	69,000	520,000
3-5	7.7	120,000	870,000
5-8	4.0	180,000	1,300,000
Population in 30 deg. sector			
0-2	26.0	23,000	96,000
2-3	12.0	37,000	170,000
3-5	5.6	48,000	290,000
5-8	2.8	56,000	430,000

Magnox reactors in concrete pressure vessels such as Oldbury and Wylfa would be allowed some relaxation of the general Magnox criteria if necessary.

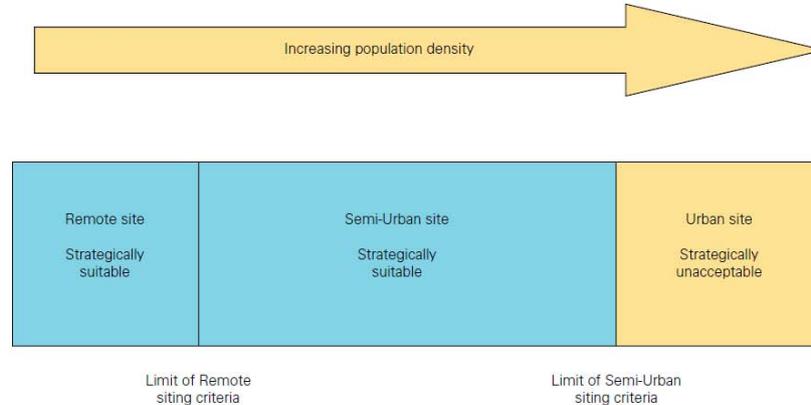
Demographic Criteria to be applied as part of the SSA

- 2.86** As part of the review, NII has concluded that regardless of proposed reactor designs, it is appropriate for the Semi-Urban population density criterion to remain the upper limit for siting new nuclear power stations, and it has advised the Government that this would be an appropriate exclusionary criterion for the purposes of the SSA.⁷¹

Reasons for applying the Semi-Urban criteria as part of the SSA

- 2.87** When a pressurised water reactor was proposed for Sizewell B, and a similar design was proposed for construction at Hinkley Point in the 1980s, the Government adopted a precautionary policy which stated that reactors of a type new to the UK (as opposed to the UK developed Magnox and AGR designs) should, regardless of their particular design, be sited in conformity with the Remote siting criterion. The Sizewell B reactor has now operated safely for over 10 years, and in the almost 30 years since it was originally proposed, there has been significant growth in world operational experience of this and other modern designs from which the reactors proposed for the UK in the GDA have evolved. Furthermore, the UK regulators have in the intervening years developed and refined their assessment approach to reflect international experience of regulation of such designs, to ensure that risks are reduced so far as is reasonably practicable.
- 2.88** On the basis of this, the Government considers that it is no longer necessary to apply the Remote siting criterion to designs such as the modern designs of reactors in the GDA, and that such a precautionary policy does not need to be applied for future siting of international modern designs.
- 2.89** This position is supported by the NII, who consider that modern reactor designs which are consistent with IAEA safety expectations and the NII's Safety Assessment Principles should present a sufficiently low level of public risk that the application of the Remote siting restriction is not warranted. The demonstration of the acceptability of that public risk would be confirmed as part of NII's detailed assessment of a site licence application based on a specific design.
- 2.90** For the purposes of the SSA, therefore, the Government intends to use the existing Semi-Urban criterion set out in Box 1 as an exclusionary criterion. When presented with site nominations in the next stage of the SSA, the Government will assess whether the demographic characteristics of the nominated sites meet the Semi-Urban criterion (as set out in Box 1). The Government will exclude from consideration in the SSA areas where the local population density exceeds the Semi-Urban criterion described in this document, and as shown by Figure 3.

Figure 3 – How sites will be assessed against these criteria



Assessment of demographics through the planning and licensing process

2.91 When carrying out an assessment of a nuclear site licence application (at or around the time of a site specific planning application), the NII will consider the population characteristics of the proposed site in order to establish the acceptability of the risks posed by the proposed nuclear power station to the local population. In carrying out this assessment, NII will apply its own demographic criteria, as amended by its recent review and which can be found on the HSE website.⁷² NII’s assessment of site licence applications will be specific to the details of the reactor design and, in certain circumstances, could lead to the NII refusing to grant a licence to construct the nuclear power station on the proposed site, or may lead to a requirement for design changes to reduce the health risk to a tolerable level. It is therefore possible that a site which meets the proposed SSA demographic criteria could be rejected at a later stage in the development process.

2.92 *The Government proposes that areas that meet the Semi-Urban and Remote criteria will, for the purposes of the SSA, be considered strategically suitable for the development of new nuclear power stations, subject to meeting all other relevant criteria. It should be noted that although a site may have demographic features which fall below the SSA exclusionary criteria, this does not mean that the demographic features will be acceptable to the NII following its detailed regulatory assessment at the time of considering a nuclear site licence application.*

72 <http://www.hse.gov.uk/newreactors/latest.htm>

APPENDIX C

EXTRACT FROM HANSARD (1973)

Written Answers, 5 December 1973, v865, cc405-406.

- Parliamentary Question by Mr David Price to Mr Emery, Secretary of State for Trade and Industry.

405

Written Answers

5 DECEMBER 1973

Written Answers

406

Mr. David Price asked the Secretary of State for Trade and Industry how close to a major conurbation he would permit a power station for the CEGB to be built according to the following reactor systems: Magnox, AGR, HTR, SGHWR, BWR, PWR and fast breeder reactor, respectively.

Mr. Emery: The Government adopted a cautious siting policy at the start of the nuclear power programme. But we required that the major contribution to public safety was to come from the high standards of design, construction and operation of nuclear plants. As a result of advances in technology and satisfactory experience in the design, construction and operation of gas cooled reactors, AGRs in prestressed concrete pressure vessels are now permitted on sites like those at Heysham and Hartlepool. Similar considerations will apply to the siting of any other reactor system adopted for commercial use in this country. Sites like those used for the earlier Magnox stations would be suitable for any reactor system I would licence and relaxation to sites nearer to centres of population would depend on relevant experience.

Mr. David Price asked the Secretary of State for Trade and Industry how many turnkey contracts have been awarded for the construction of electricity generating power stations using a nuclear reactor system in the United Kingdom, the United States of America and Western Europe, respectively, in the last 10 years; and in how many cases in each category a loss has been admitted by the contractor.

Mr. Emery: In the 10-year period 1963-73 contracts have been awarded in the United Kingdom for the construction of six nuclear electricity generating stations. All were turnkey contracts.

The construction companies provide annual reports and accounts in the usual manner. Five of the contracts—for advanced gas-cooled reactors—have yet to be completed. Information in the detail asked for on overseas contracts is not available.

Mr. David Price asked the Secretary of State for Trade and Industry what advan-

tage he estimates a Westinghouse PWR nuclear power station would have for the Central Electricity Generating Board over any other alternative European system.

Mr. Emery: The PWR is one of the reactor systems being examined by the NPAB as part of its work on thermal reactor choice. It has not yet made any recommendation on this subject. As I have made clear, we hope to reach decisions in the early part of next year.

Motor Cars (Imports)

Mr. Bryant Godman Irvine asked the Secretary of State for Trade and Industry, in view of the decision of all major importers of foreign cars to impose a quota system for imports of cars, whether he will now make this his policy; and if he will make a statement.

Sir G. Howe: I am not aware of any such decision.

London and County Securities Limited

Mr. Stainton asked the Secretary of State for Trade and Industry if he will take steps to establish that the doubtful viability of the London and County Securities Limited group does not apply to or will not affect similar operations run by other companies, having regard equally to the interests of shareholders and depositors, policy and bond holders, and persons with second mortgages.

Sir G. Howe: I see no need for special action of the kind suggested. A system for monitoring the accounts of deposit-taking companies at six-monthly intervals already exists under the terms of the Protection of Depositors Act 1963.

Mr. Stainton asked the Secretary of State for Trade and Industry if he will investigate the second mortgage and banking transactions of the London and County Securities Limited group with a view to protecting members of the public who may be involved as borrowers or depositors in this banking concern.

Sir G. Howe: As I indicated in reply to the right hon. Gentleman the Member for Bristol, South-East (Mr. Benn) on 3rd December—[Vol. 865, c. 909-16]—certain inquiries are already being made by my Department. The scope of these

APPENDIX D

DEPARTMENT OF ENERGY AND CLIMATE CHANGE

Nuclear New Build: DECC Statement on Siting Policy [†]

29 October 2012

[†] DECC Statement on Siting Policy TRIM Ref: 2012/0422138



Mike Warnes
Office for Nuclear Regulation
BOOTLE
e-mail :mike.warnes@hse.gsi.gov.uk

Department of Energy & Climate Change
55 Whitehall
London SW1A 2EY
E: owen.jenkins@decc.gsi.gov.uk
T:0300 068 5869
www.decc.gov.uk

29 October 2012

1. I said I would confirm the Government's policy on the siting of new nuclear power stations as this relates to consideration of demographics.
2. I attach links to documents published between 2007 and 2011 as part of the Strategic Siting Assessment / National Policy Statement process. These documents set out the policy that new nuclear power stations can be sited in semi-urban areas. This policy was intended to replace, as far as new nuclear power stations are concerned, any previous requirement that nuclear power stations need to be sited in remote areas.
3. Any published statement about Government siting policy for new nuclear power stations should follow these lines and cite earlier policies only in a historic context.
4. The policy does not, however, replace the need for detailed examination by ONR of any proposal to build a new nuclear power station and specifically of demographic criteria. In particular, ONR might following detailed examination reject an application for a site licence for a site included in the NPS; on demographic (or other) grounds
5. You also asked which reactor designs the siting policy referred to. Paragraph 2.88 of the 2008 consultation document referred to in the Annex says *"Government considers that it is no longer necessary to apply the Remote siting criterion to designs such as the modern designs of reactors in the GDA, and that such a precautionary policy does not need to be applied for future siting of international modern designs"*. The intention is that the policy should apply to any design brought forward for development consent by a credible nuclear operator, subject to detailed regulatory examination.
6. DECC LEGAL have agreed the terms of this statement.

Owen Jenkins
Office for Nuclear Development



ANNEX – Recent statements of Government policy on siting of new nuclear power stations – demographic criteria

May 2007 consultation document on Strategic Siting Assessment process
Chapter 3 paras 11- 15 – Historic siting policy and practice.

<http://webarchive.nationalarchives.gov.uk/20100512172052/http://www.berr.gov.uk/files/file39199.pdf>

January 2008 Nuclear White Paper

3.13 – “A key component of the [nuclear] NPS will be siting criteria which the Government considers should be used to assess the suitability of potential sites for nuclear power stations...”

http://webarchive.nationalarchives.gov.uk/20100512172052/http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/nuclear/white_paper_08/white_paper_08.aspx

July 2008 consultation document on Strategic Siting Assessment process

2.7 – DECC consulted regulators including NII especially with reference to criterion 1.10, demographics

2.81 – in summary, no longer necessary to insist on remote, semi-urban acceptable at strategic level, but NII, in assessing site licence applications, will “apply its own demographic criteria”.

<http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/files/file47136.pdf>

January 2009 Response to consultation on Strategic Siting Assessment process

Page 83 on the criterion. “For the purpose of the SSA process, the Government will use the Semi-Urban siting criteria...the calculations will be undertaken by the NII...”

<http://webarchive.nationalarchives.gov.uk/+http://www.berr.gov.uk/files/file49865.pdf>

July 2011 Nuclear NPS

Volume 1 – 3.5.3 – demographics to be considered by ONR as part of Flags for Local Consideration.

Volume 2 – each site summary says “[ONR] has advised that none of the site exceeds the semi-urban criterion. The site passes the demographic criterion.”, or similar language.

<http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/2009-nps-for-nuclear-volumel.pdf>

<http://www.decc.gov.uk/assets/decc/11/meeting-energy-demand/consents-planning/nps2011/1943-nps-nuclear-power-annex-voIII.pdf>