

**BERR**

Department for Business  
Enterprise & Regulatory Reform

**THE JUSTIFICATION OF PRACTICES  
INVOLVING IONISING RADIATION  
REGULATIONS 2004**

Guidance for applications relating to new  
nuclear power

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## Introduction

1.1. This Guidance has been prepared by BERR in consultation with the Department for the Environment, Food and Rural Affairs (Defra). It is aimed specifically at applicants wishing to seek a decision under the Justification Regulations<sup>1</sup> to Justify new nuclear power. It sets out the process for submitting applications and outlines the decision-making process. It also provides additional information directly relevant to new nuclear power, building on Defra's general Justification Guidance<sup>1</sup>. Applicants will therefore need to refer to both documents.

1.2. In May 2007, the Government launched a consultation<sup>2</sup> to examine whether nuclear power should play a role, alongside other low carbon forms of electricity generation, in meeting the twin challenge of tackling climate change and ensuring security of energy supply.

1.3. The Government carefully considered the responses to the consultation, and in January 2008 issued a White Paper on Nuclear Power<sup>3</sup>. The White Paper sets out the basis for the conclusion that nuclear power should be allowed to play a role in this country's future energy mix alongside other low-carbon sources; that it would be in the public interest to allow energy companies the option of investing in new nuclear power; and that Government should take active steps to facilitate this.

1.4. The Government consulted on a proposed process for Justification at the same time as consulting on the role of nuclear power<sup>4</sup>. Our consideration of comments received in relation to Justification is set out in the White Paper at Annex B. We have taken those comments into consideration in preparing the Justification process and in preparing this guidance.

## Justification

1.5. Nuclear power involves the use and production of materials which emit ionising radiation and are therefore subject to stringent regulatory requirements regarding their design and operation. Justification is one of a number of statutory, regulatory and license clearance processes. It does not, by itself, authorise the construction or operation of any particular plant or activity, nor does it replace the detailed safety, security and environmental assessments carried out by the nuclear regulators. Instead, Justification is a high-level assessment to assess the benefits and any health detriment associated with a particular class or type of nuclear practice.

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<sup>1</sup> The Justification of Practices Involving Ionising Radiation Regulations 2004 ([www.defra.gov.uk/environment/radioactivity/government/legislation/justification.htm](http://www.defra.gov.uk/environment/radioactivity/government/legislation/justification.htm))

<sup>2</sup> The Future of Nuclear Power: The Role of Nuclear Power in a Low Carbon UK Economy (URN 07/970)

<sup>3</sup> Meeting the Energy Challenge: A White Paper on Nuclear Power (CM 7296).

<sup>4</sup> The Future of Nuclear Power: Consultations on the proposed processes for Justification and Strategic Siting Assessment (URN 07/972), May 2007

1.6. The concept of Justification set out in the regulations is based on the internationally accepted principle of radiological protection that no practice involving exposure to ionising radiation should be adopted unless it produces sufficient benefits to the exposed individuals or to society in general to offset any radiation detriment it may cause. This principle is derived from the recommendations of the International Commission on Radiological Protection (ICRP), in particular, ICRP 60.

1.7. Justification applies to a class or type of practice and provides a high-level assessment to determine whether the economic, social or other benefits outweigh any health detriments associated with a particular class or type of practice. The test is to show that there is a net benefit, not that the type or class or practice is the best of all available options. The Justification assessment is generic rather than site specific.

1.8. Other ICRP principles (optimisation and limitation) are given effect by statutory regulatory processes, for example licensing, authorisations and planning consents. Those regulatory controls will occur subsequently to the Justification process. These also consider radiological impacts, but do so at a more detailed level and do not form part of the Justification process.

1.9. The ICRP principles have been incorporated into European Community law by article 6(1) and (2) of Directive 96/29/Euratom ('the Basic Safety Standards Directive'). Articles 6(1) and (2) of that Directive were implemented in the UK by the Justification of Practices Involving Ionising Radiation Regulations 2004 (the Justification Regulations).

## **Justifying Authorities**

1.10. There are four Justifying Authorities in the UK, namely, the relevant Secretary of State and the three Devolved Administrations to the extent that they have competence in respect of the subject matter of a particular Justification application. Who will be the Justifying Authority in relation to an application for a Justification decision in relation to a new reactor design will depend on the nature of the application. However, it should be noted that nuclear energy is a reserved matter and it is anticipated that the Secretary of State for BERR will be the Justifying Authority.

1.11. Where the Secretary of State for BERR is the sole Justifying Authority, then any Justification decision will be UK-wide but before he makes a decision he will, in accordance with Regulation 18(2) of the Justification Regulations, consult the Devolved Administrations. There is a Concordat<sup>5</sup> between the Government and the Devolved Administrations which sets out the working relations in a way that respects the devolution settlements.

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<sup>5</sup> Concordat on the Implementation of the Justification of Practices Involving Ionising Radiation Regulations 2004.

## **What is a practice**

1.12. The Directive defines “practice” as “a human activity that can increase the exposure of individuals to radiation from an artificial source or from natural radiation sources where use is being made of its radioactive, fissile or fertile properties”. The Justification Authority will determine what constitutes the relevant class or type of practice(s) once it has received application(s).

1.13. The term ‘practice’ includes a wide range of activities including nuclear power generation and supporting activities, the use of radioactive materials or radiation sources for industrial and medical applications and the use of radioactive materials.

1.14. An important issue is defining the scope of the practice. Nuclear reactors need to be supported by facilities for fuel manufacture and for managing spent fuel and various categories of radioactive waste. ICRP emphasises that waste management and disposal operations are an integral part of the practice generating the waste and that it is wrong to regard them as a free-standing practice that requires its own Justification.

1.15. In order to ensure protection of workers and the public from the effects of radiation it may be necessary, depending on the circumstances, to consider transport either as part of a practice or as a practice in its own right. The transportation of radioactive materials is likely to be a required part of the practice of generating electricity from nuclear power. If so, it will be appropriate to consider it as part of the practice.

## **Health detriment**

1.16. A key feature of Justification is the requirement for an assessment of the health detriment which may be caused by a class or type of practice. Any person carrying out a justified activity (including storage and disposal of waste and decommissioning) will be required to comply with health, safety and environmental legislation which will require the operator to demonstrate that doses from ionising radiation to the workforce and members of the public is reduced to as low as reasonably practicable and within dose limits and constraints.

1.17. Under Regulation 4(2) of the Justification regulations, “Justified” in relation to a new class or type of practice means Justified by its economic, social or other benefits in relation to the health detriment it may cause. The Directive defines health detriment as an estimate of the risk of reduction in length and quality of life occurring in a population following exposure to ionising radiations.

1.18. Applicants seeking Justification in relation to new nuclear power will need to demonstrate that any health detriment from ionising radiation is offset by the benefits associated with the practice. Benefits can cover economic, social or other benefits.

## Making and considering applications

1.19. Table 1 sets out the process for receiving and considering applications for Justification in relation to new nuclear power, and provides an indicative timeframe. All this will be done in line with the concordat. The timings set out in Table 1 are indicative and are based on an application being received as a result of the initial call for applications. However, the same process would be applied to application received outside the call for applications, with the dates suitably modified.

**Table 1.**

<b>Step</b>	<b>Justification Process</b>	<b>Indicative Timeframe</b>
1	Announce call for applications and publish guidance. This is a time-limited call to ensure greater efficiency in the Justification process. We will allow two months in which we will receive applications. While this does not preclude applications for Justification being made at any other time, applications received during the time-limited window will be processed first.	March '08
2	Having received applications, the Secretary of State for BERR will decide whether or not the application relates to a new or existing class of type of practice. If the applications relate to a new class or type of practice, the Justifying Authority will need to carry out a Justification assessment. If they relate to an existing class or type of practice, the Justifying Authority will need to consider whether to review the Justification of that class or type of practice. It is likely to do so if new or important evidence about the efficacy or consequences of the class or type of practice has been acquired.	June '08
3	Assess whether sufficient information has been provided by applicants and, where necessary, request additional information.	June '08
4	Publish applications and any additional information received and invite comments.	Aug '08
5	Consider comments received and prepare a proposed decision document, in consultation with statutory consultees, Devolved Administrations and other interested parties. The proposed decision document will set out the Justifying Authority's assessment of the benefits and detriments of the class or type of practice.	Nov '08
6	Public consultation on the proposed decision document. The consultation will run for three months. Responses will be assessed before making any decision to revise the draft decision document.	Jan '09
7	Public engagement activities as part of the consultation process.	Feb - March '09

8	Consider consultation responses and feedback from public engagement exercise as appropriate.	April '09
9	Revised Justification Decision Document for Justifying Authority's consideration.	July '09
10	If the class or type of practice is found to be justified, the Justifying Authority will make a Justification Decision in the form of secondary legislation (a statutory Instrument).	July '09
11	Bring to the attention of any person likely to be affected by the decision by writing the applicant, issuing a Press Notice and publishing notices in the London, Edinburgh and Belfast Gazettes.	July '09

### ***Considering multiple applications***

1.20. BERR has considered how and if the Justification process should handle concurrent applications covering a number of specific nuclear power reactor designs.

1.21. The Defra Guidelines make the point that nuclear power generation represents a very broad generic class or type of practice, and that the benefits and detriments arising from the operation of different types of nuclear power generation could differ substantially. Where there are such substantial differences, it is unlikely that a single Justification decision could be made. However, a single Justification decision could possibly be made in respect of similar designs having broadly similar benefits and detriments, i.e. the reactor designs do not need to be identical. Therefore, it may be possible to make a single Justification decision in relation to a number of similar reactor designs, each employing particular processes, providing that the technological differences do not result in major disparities between the scale and balance of the benefits and detriments.

1.22. To enable the most effective use of public resources, the Government therefore encourages applications which would enable a single Justification decision in relation to a number of different designs.

### ***Information requirements***

1.23. In accordance with the Justification Regulations, it is proposed that an applicant should provide information that will enable the Justifying Authority to undertake a high-level assessment of the net economic, social or other benefits against the health detriments in relation to the operation of new nuclear power in the UK. The JA has powers under the Regulations to seek additional information as necessary in order to make a Justification Decision.

1.24. In addition to the information set out in the Defra Guidance, Table 2 provides an indicative list of information expected of applicants. This is not intended to be prescriptive but rather indicates the main information likely to be necessary to enable a clear, high-level assessment of the health detriments and

the net economic, social or other benefits associated with the introduction of a particular type or class of practice. It is also not intended to be exhaustive. Whilst exercising their own judgment on what may be relevant, applicants are nevertheless encouraged to follow the guidance set out below.

1.25. To facilitate the Justification Decision, the Justifying Authority will require information on the expected benefits and detriments of the proposed nuclear power generators for which the application is made. In addition to anticipated detriments (e.g. routine controlled radioactive discharges, routine worker radiation exposure) the applicant should provide information on potential detriments (e.g. accidents). For potential detriments, the applicant should summarise how the risks of their occurrence are adequately controlled or mitigated.

1.26. Applicants may also provide additional information which they consider will help substantiate their application, including work commissioned by the applicant.

**Table 2.**

<b>Introductory information on proposed class or type of practice</b>	
Description of the proposed class or type of practice	<p>Applicants may include one or more types of reactor design in their application. Applicants should consider providing information in the following areas:</p> <p>summary of class or type of practice, suppliers/vendors and main technical characteristics (e.g. electrical output, fuel type and source, fuel cycle, waste and decommissioning).</p> <p>Confirmation of whether or not the application is made under Regulation 9 of the 2004 Regulations for a decision in respect of a new class or type of practice.</p>

<b>Health detriments</b>	
Health detriments	<p>Applicants should provide information explaining how the proposed type or class of practice may cause radiological detriment to human health. This should cover all aspects of the reactor lifecycle including, for example, decommissioning, waste disposal and transport. Areas to cover could include:</p> <p>health detriments to general public, plant workers and other specific population groups;</p> <p>normal operation and accident conditions; and</p> <p>a summary explanation of how design operation and mitigation strategies will reduce the risk and magnitude of accidental radiological exposures to below regulatory limits.</p>
<b>Economic, social or other benefits and detriments</b>	
Waste and decommissioning	<p>Applicants should provide information explaining how decommissioning and waste management and disposal would be dealt with. Areas to cover could include:</p> <p>nature and volume of radioactive waste that could be expected to be produced;</p> <p>features of the design that facilitate decommissioning;</p> <p>mitigation strategies, regulatory arrangements and related assurance to address detriments and risks; and</p> <p>other benefits and detriments.</p>
Physical security of electricity supply	<p>Areas to cover could include:</p> <p>benefits and detriments associated with baseload plant;</p> <p>vulnerability to fluctuations in availability of fuel;</p> <p>value of more or less diverse portfolio mix;</p> <p>mitigation strategies, regulatory arrangements and related assurance to address such detriments and risks; and</p> <p>other pertinent benefits and detriments.</p>

Carbon reduction	<p>Applicants may provide information explaining how the proposed class or type of practice would demonstrate its low carbon footprint and act as a benefit or detriment to emissions of other greenhouse gases and emissions. Areas to cover could include:</p> <p>total emissions across the full life cycle;</p> <p>net contribution to UK's overall emissions;</p> <p>emissions from alternatives if the proposed designs were not deployed;</p> <p>mitigation strategies, regulatory arrangements and related assurance to address pertinent detriments and risks; and</p> <p>other pertinent benefits and detriments.</p>
Other environmental benefits and detriments	<p>Areas to cover could include:</p> <p>non-radiological effects on people and the environment (water, air, chemicals, light, thermal, noise, landscape, animal health, flora/fauna etc.);</p> <p>radiological effects on flora/fauna;</p> <p>normal operation and accident or terrorism related conditions including management and disposal of waste (radioactive and non-radioactive);</p> <p>accident and terrorism mitigation strategies;</p> <p>assurance provided against stated risks (including reference to the regulatory regime);</p> <p>other pertinent benefits and detriments.</p>
Other benefits and detriments	<p>Areas to cover could include:</p> <p>transportation of fuel and waste;</p> <p>non-proliferation;</p> <p>health non-radiological detriments in normal/accident conditions;</p> <p>safety – nuclear, industrial and normal/accident;</p> <p>mitigation strategies, regulatory arrangements and related assurance to address detriments and risks; and</p> <p>other economic, social or other benefits and detriments.</p>

**Contact for further information**

1.27. Applications for a Justification Decision on new nuclear power should be sent to:

The Justification Assessment Centre

Department for Business, Enterprise and Regulatory Reform

Bay 128, 1 Victoria Street

London SW1H 0ET

Telephone: 020 7215 5000

Email: [justification@berr.gsi.gov.uk](mailto:justification@berr.gsi.gov.uk)

**And copied to:**

Justification Application Centre (JAC)

Radioactive Substances Division

Room 4C, Ergon House

Horseferry Road

London SW1P 6AL

Telephone: 020 7238 1720

Email: [justification@defra.gsi.gov.uk](mailto:justification@defra.gsi.gov.uk)