

**BERR**

Department for Business  
Enterprise & Regulatory Reform

**THE ENERGY BILL 2008**

Consultation on Funded  
Decommissioning Programme  
Guidance for New Nuclear  
Power Stations

FEBRUARY 2008

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### **Why is BERR conducting this consultation?**

**It was announced in the Nuclear White Paper 2008<sup>1</sup> that, in parallel with the Energy Bill<sup>2</sup>, the Government will publish for public consultation two sets of draft guidance on what an approvable Funded Decommissioning Programme should contain. This consultation document contains both sets of draft guidance and seeks views on the guidance.**

**Issued on:** 22 February 2008

**Respond by:** 16 May 2008

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Department for Business, Enterprise and Regulatory Reform  
Bay 125, 1 Victoria Street, London SW1H 0ET

Tel: 0207 215 3331

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<sup>1</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power,URN 08/525, January 2008

<sup>2</sup> Energy Bill, Session 2007-08, Bill 53 07-08

# Introduction

## Executive Summary

**1** This consultation follows the publication of the White Paper on Nuclear Power in January 2008, which announced the Government's formal response to the consultation on the future of nuclear power.

**2** The Nuclear White Paper<sup>3</sup> stated that:

*"The Government believes it is in the public interest that new nuclear power stations should have a role to play 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 stations; and that the Government should take active steps to open up the way to the construction of new nuclear power stations. It will be for energy companies to fund, develop and build new nuclear power stations in the UK, including meeting the full costs of decommissioning and their full share of waste management costs."*

**3** The Government also confirmed its commitment to put in place legislative arrangements to ensure that operators of new nuclear power stations have secure financing arrangements in place to meet the full costs of decommissioning and their full share of waste management costs. Clauses in the Energy Bill 2008<sup>4</sup> create the framework for this. The Energy Bill will require any operator of a new nuclear power station to have a Funded Decommissioning Programme, approved by the Secretary of State, in place before construction of a new nuclear power station begins and to comply with this programme thereafter. The Funded Decommissioning Programme prepared by the operator of a new nuclear power station must include:

- provision for the steps necessary to decommission the installation and manage and dispose of hazardous waste;
- an estimate of the costs of taking those steps; and
- details of any security to be provided in relation to those costs.

**4** It was also announced in the Nuclear White Paper that, in parallel with the Energy Bill, the Government would publish for public consultation two sets of draft guidance on what a Funded Decommissioning Programme (FDP) should contain.

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<sup>3</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

<sup>4</sup> Energy Bill, Session 2007-08, Bill 53 07-08

- 5 This guidance will assist operators in understanding their obligations under the Energy Bill, and what is required for an approvable Funded Decommissioning Programme. The guidance is not intended to be unduly prescriptive but instead to set out principles which the Secretary of State will expect to see satisfied in the Funded Decommissioning Programme prepared by an operator. The guidance gives information on ways in which the operator might satisfy those principles.
- 6 The first set of guidance (Decommissioning and Waste Management Plan guidance) will assist operators in setting out and costing the steps involved in decommissioning a new nuclear power station and managing and disposing of hazardous waste and spent fuel in a way which the Secretary of State may approve. This guidance also sets out the cost modelling methodology the Government expects to use to generate its own prudent estimates of the costs of decommissioning, waste management and waste disposal for new nuclear power stations.
- 7 This consultation document also contains a Roadmap that sets out an indicative timeline under which the Government expects to publish its cost estimates and to be in a position to set a fixed unit price for waste disposal. This Roadmap (set out in Section 2 of this document) is included for information only and views are not requested on it.
- 8 The second set of guidance (Funding Arrangement Plan guidance) will assist operators in setting out acceptable financing proposals to meet the costs identified. It sets out the Guiding Principles against which the Government will assess the funding proposals submitted by operators as part of their Funded Decommissioning Programme for approval under the Energy Bill.

## *Consultation Questions*

### **Question 1**

Do you agree or disagree that the Funded Decommissioning Programme guidance adequately sets out what an approvable Funded Decommissioning Programme should contain in order to meet the Government's objective that operators of new nuclear power stations meet the full costs of decommissioning and their full share of waste management costs? What are your reasons? Do you have any other comments on the two sets of guidance?

### **Question 2**

Does the draft guidance contain sufficient information to enable operators of new nuclear power stations to understand the matters that their Funded Decommissioning Programme should contain?

### Question 3

Do you agree or disagree that the Base Case sets out a realistic and prudent way to estimate the potential costs of waste management and decommissioning. What are your reasons?

### Question 4

Do you agree or disagree that the Funding Arrangements Plan guidance sets out a prudent way to ensure that operators make adequate provision for meeting their liabilities? What are your reasons?

## How to Respond

- 9 We want to hear from members of the public, industry, financial and other institutions that may be involved in the financing of new nuclear power stations, non-governmental organisations and any other organisation or body with an interest.
- 10 We are seeking views on the draft guidance before it is finalised following Royal Assent of the Energy Bill. The draft guidance is set out in Sections 4 and 5 of this document. Sections 1-3 are for information and we are not seeking comments on these sections.
- 11 The consultation began on 22 February 2008 and will close on Friday 16 May 2008.
- 12 A response can be submitted by letter, fax or email (email preferred) to:

Guidance consultation, Nuclear Unit  
Department for Business, Enterprise and Regulatory Reform  
Bay 125, 1 Victoria Street,  
London,  
SW1H 0ET  
Tel: 0207 215 3331  
Fax: 0207 215 2842  
Email: [DecomGuidance@berr.gsi.gov.uk](mailto:DecomGuidance@berr.gsi.gov.uk)

### *Additional points about this consultation*

- 13 When responding, please state whether you are responding as an individual or representing the views of an organisation. If you are responding on behalf of an organisation, please make it clear who the organisation represents and, where applicable, how you assembled the views of members.
- 14 The deadline for responses is Friday 16 May 2008.

## *Confidentiality and Data Protection*

- 15** Your response may be made public by BERR. If you do not want your name or all or part of your response made public, please state this clearly in the response. Any confidentiality disclaimer that may be generated by your organisations' IT system or included as a general statement in your fax cover sheet will be taken to apply only to information in your response for which confidentiality has been specifically requested.
- 16** Information provided in response to this consultation, including personal information, may be subject to publication or disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004).
- 17** If you want other information that you provide to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.
- 18** In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances.
- 19** The Department will process your personal data in accordance with the DPA and in the majority of circumstances this will mean that your personal data will not be disclosed to third parties.

## *Additional copies*

- 20** You may make copies of this document without seeking permission. An electronic version can be found at: <http://www.berr.gov.uk/energy/nuclear-whitepaper/consultations/page44523.html>

## *Help with queries*

- 21** Please email [DecomGuidance@berr.gsi.gov.uk](mailto:DecomGuidance@berr.gsi.gov.uk) or telephone 0207 215 3331.

- 22** If you have comments or complaints about the way this consultation has been conducted, these should be sent to:

Vanessa Singhatoh, Consultation Co-ordinator  
Department for Business, Enterprise and Regulatory Reform  
Better Regulation Team  
1 Victoria Street  
London SW1H 0ET  
E-mail: [vanessa.singhatoh@berr.gsi.gov.uk](mailto:vanessa.singhatoh@berr.gsi.gov.uk)  
Tel: 020 7215 2293  
Fax: 020 7215 2235

- 23** The Government's Code of Practice on Consultation is set out at Annex B.

### *Next Steps*

- 24** The results of this consultation exercise will be published on the BERR website.
- 25** Following this consultation, and after the Energy Bill has achieved Royal Assent, the Government will finalise the two sets of guidance published here in draft and will lay them before Parliament as Statutory Guidance.
- 26** It is currently envisaged under the Energy Bill that the Secretary of State will make a number of orders after the Bill has achieved Royal Assent. Further information is set out in paragraphs 3.22–3.33.





# Section 1: Background

- 1.1** This section sets out the background to the guidance which is the subject of the consultation, to set it in the wider context of the Government's energy strategy and to describe relevant policies on managing radioactive waste safely. It is provided here for information only.

## The Government's conclusion on the future of nuclear power

- 1.2** The Nuclear White Paper<sup>5</sup> set out the Government's formal response to the consultation on the future of nuclear power. It stated its overall conclusion as follows:
- 1.3** *"The Government has taken its decision to allow new nuclear power stations to be built against the very challenging backdrop of climate change and threats to our energy security. The Government's conclusion is that nuclear power is:*
- *Low-carbon – helping to minimise damaging climate change*
  - *Affordable – nuclear is currently one of the cheapest low-carbon electricity generation technologies, so could help us deliver our goals cost effectively*
  - *Dependable – a proven technology with modern reactors capable of producing electricity reliably*
  - *Safe – backed up by a highly effective regulatory framework*
  - *Capable of increasing diversity and reducing our dependence on any one technology or country for our energy or fuel supplies.*

*On this basis, the Government believes that it is in the public interest that new nuclear power stations should have a role to play 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 stations; and that the Government should take active steps to open up the way to the construction of new nuclear power stations. It will be for energy companies to fund, develop and build new nuclear power stations in the UK, including meeting the full costs of decommissioning and their full share of waste management costs<sup>6</sup>."*

<sup>5</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

<sup>6</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

- 1.4** In the Nuclear White Paper the Government set out its conclusion on waste and decommissioning:

*“Having reviewed the arguments and evidence put forward, the Government believes that it is technically possible to dispose of new higher-activity radioactive waste in a geological disposal facility and that this would be a viable solution and the right approach for managing waste from any new nuclear power stations. The Government considers that it would be technically possible and desirable to dispose of both new and legacy waste in the same geological disposal facilities and that this should be explored through the Managing Radioactive Waste Safely programme. The Government considers that waste can and should be stored in safe and secure interim storage facilities until a geological facility becomes available.*

*Our policy is that before development consents for new nuclear power stations are granted, the Government will need to be satisfied that effective arrangements exist or will exist to manage and dispose of the waste they will produce.*

*The Government also believes that the balance of ethical considerations does not rule out the option of new nuclear power stations<sup>7</sup>.”*

- 1.5** The Nuclear White Paper also set out a Government statement on the MRWS process and geological disposal<sup>8</sup>.
- 1.6** In the Nuclear White Paper, the Government confirmed its commitment to put in place legislative arrangements to ensure that operators of new nuclear power stations have secure financing arrangements in place to meet the full costs of decommissioning and their full share of waste management costs. Clauses in the Energy Bill create the framework for this requirement. This will be achieved by requiring any operator of a new nuclear power station to have a Funded Decommissioning Programme, approved by the Secretary of State, in place before construction of a new nuclear power station begins and to comply with this programme thereafter.
- 1.7** The Government has determined that independent funds, outside of the control of operators, should be created to accumulate and manage payments to meet the full costs of decommissioning and full share of waste management costs. This approach would be transparent and would be consistent with the policy of ensuring that operators, not the Government, take full responsibility for meeting the costs of decommissioning, waste management and disposal.
- 1.8** The Secretary of State for Trade and Industry (now Secretary of State for Business, Enterprise and Regulatory Reform) appointed Dr Tim Stone, a senior financier with experience of major capital investment projects, in January 2007, to advise the Government on financing the costs of decommissioning

<sup>7</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, page 99, URN 08/525, January 2008

<sup>8</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, Box 3, page 94, URN 08/525, January 2008

and waste management and disposal costs for new nuclear power stations. Dr Stone reports to the Secretary of State for Business, Enterprise and Regulatory Reform and the Chief Secretary to the Treasury.

## Formation of the Nuclear Liabilities Financing Assurance Board (NLFAB)

- 1.9** In the Nuclear White Paper, the Government announced its intention to create a new independent advisory body, the Nuclear Liabilities Financing Assurance Board (NLFAB). This new board will provide independent scrutiny and advice on the suitability of the Funded Decommissioning Programmes submitted by operators of new nuclear power stations, prepared with the aid of the guidance which is the subject of this consultation.
- 1.10** The NLFAB will advise the Secretary of State for Business, Enterprise and Regulatory Reform on the financial arrangements that operators submit for approval. The NLFAB will also provide advice to the Secretary of State on the regular reviews and ongoing scrutiny of funding arrangements.
- 1.11** The NLFAB is expected to consist of experts from relevant fields such as current or former fund managers, pension trustees, actuaries and nuclear specialists. The board members will be appointed by the Secretary of State.
- 1.12** The NLFAB will be a purely advisory body and will have a tightly defined scope focused solely on advising whether the financial arrangements put in place by operators for decommissioning and waste management and disposal are sufficiently robust. The advice of the NLFAB with respect to Funded Decommissioning Programmes will be made public, but the Secretary of State will retain responsibility for the actual approval (or rejection) of programmes.
- 1.13** It is expected that, in scrutinising the Funded Decommissioning Programmes, the NLFAB will make use of existing regulators' expertise.
- 1.14** For information, we set out in Table 1 an indicative timetable for the creation of the NLFAB.

**Table 1: Indicative timetable for creation of the Nuclear Liabilities Financing Assurance Board**

Q2 2008	Publication of the NLFAB Terms of Reference
Q2/Q3 2008	Begin recruiting process
Q4 2008/Q1 2009	Formation of NLFAB Initial meeting of the board Available to advise Secretary of State following the submission of Funded Decommissioning Programmes by operators



# Section 2: Fixing a price and schedule for the disposal of intermediate level waste and spent fuel (higher activity waste) from new nuclear power stations

**2.1** This section sets out background information on the Government's policy to set a fixed unit price for operators of new nuclear power stations for disposal of intermediate level waste and spent fuel, and a schedule for the Government<sup>9</sup> to take title to and liability for these materials. This section is for information only and views are not sought on it as part of the consultation. Further information on many of the issues raised in this section is included in Sections 4 and 5 of this document, which present the two sets of draft guidance for consultation.

## Full decommissioning costs

**2.2** The Nuclear White Paper set down that *"It is the Government's policy that the owners and operators of new nuclear power stations must set aside funds over the generating life of the power station to cover the full costs of decommissioning and their full share of waste management and disposal costs<sup>10</sup>."*

**2.3** To provide further clarification, the Government considers that full decommissioning costs are the costs of:

- dismantling the nuclear power station at the end of its generating life
- removing all station buildings and facilities and returning the site to a state agreed with the regulators and the planning authority and released from the control of the nuclear site licence. This is likely to be a state similar to "Greenfield", depending on the state of the site prior to construction of the station.

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<sup>9</sup> In this section references to the Government in the context of setting a fixed unit price for waste disposal and a schedule for taking title to and liability for such waste should be read as references to central Government and other bodies acting on behalf of and funded by central Government.

<sup>10</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

- 2.4** Operators will be required to produce robust estimates of the costs of decommissioning and to ensure that sufficient funds are set aside in an independent Fund to meet the costs as they fall due.

## Full share of waste management costs

- 2.5** To provide further clarification, the Government considers that an operator's full share of waste management costs is:
- the costs that are directly attributable to disposing of new build higher activity waste into a geological disposal facility;
  - a contribution towards the fixed costs of constructing such a geological disposal facility;
  - a significant risk premium over and above these costs to take account of uncertainties around the cost of constructing such a facility and the time when it will be able to accept new build waste; and
  - the cost of managing that waste pending disposal (or pending transfer for disposal).
- 2.6** Separately, operators are also responsible for the full cost of disposing of low level waste in a disposal facility and managing this waste pending its disposal.
- 2.7** The Government is modelling the financial impact of adding waste from new nuclear power stations to a geological disposal facility that would otherwise be designed to hold only the UK's existing nuclear waste inventory. Our modelling takes into account the additional direct costs; for example, through needing to construct additional underground caverns to accept waste from new nuclear power stations. We will then consider which other items of cost the addition of waste from new nuclear power stations might affect less directly. In this way, we will be in a position to ensure that the price that operators pay for disposal of their higher-activity wastes in the Government-provided geological disposal facility reflects their full share of the costs of adding waste from new nuclear power stations to this facility. These costs will include a proportion of the fixed costs of building a geological disposal facility. We are working on a methodology to determine how the fixed costs of building a geological disposal facility should be apportioned to and shared between operators of new nuclear power stations. Our methodology for defining the "full share of costs" will address the issue of quantifying these indirect costs in determining the contribution that operators of new nuclear power stations ought to make.
- 2.8** The Roadmap, in paragraphs 2.25 – 2.32 and Table 2, sets out an indicative timeline for when more detail on how the Government will determine the contributions that operators should make to meet their full share of waste management costs is expected to be available. The indicative timeline also shows when we expect to be in a position to publish updated estimates of the total costs of waste management, disposal and decommissioning, and a methodology for establishing a fixed unit price for the disposal of intermediate

level waste and spent fuel. The indicative timeline is being included for information only and we are not seeking comments on it through this consultation.

### *Clarity on the costs for disposal of waste and spent fuel from new nuclear power stations in a Government facility*

- 2.9** In the Nuclear White Paper<sup>11</sup>, we said that potential investors in new nuclear power stations need clarity on the maximum amount that they would be expected to pay for the Government to take responsibility for their future waste in a geological disposal facility. This cost certainty would enable them to take investment decisions and seek financing. Energy companies have indicated that they would be prepared to pay a significant risk premium over and above the expected costs of disposing of waste and spent fuel, in return for having the certainty of a fixed upper price.
- 2.10** The Government would expect to set a fixed unit price based on the operator's projected full share of waste disposal costs at the time when the approvals for the station are given, prior to construction of the station. The Government would expect to set a fixed price per unit of intermediate level waste or spent fuel for disposal, to ensure that the amount that operators pay is relative to the amount of waste or spent fuel they produce. This price will be set at a level over and above expected costs and will include a significant risk premium. This risk premium should help to ensure that the operator bears the risks around uncertainty in waste costs and will provide the taxpayer with material protection against the eventuality that the actual costs of geological disposal exceed the projected costs. Should the actual costs of providing the waste disposal service prove lower than expected, these lower costs will not be passed on to nuclear operators, who would have gained from certainty of a fixed price and would not have been exposed to the risk of price escalation.
- 2.11** The fixed unit price the Government will set for operators for waste disposal will reflect the most up to date estimates of costs available at the date when the price is set and the level of certainty the Government has on those costs. Consequently, dependent upon the date of the nuclear power station's construction, operators of different power stations may be set different fixed unit prices for waste disposal. The fixed unit price will be escalated over time in line with, for example, inflation.
- 2.12** The fixed unit price will be for the disposal of intermediate level waste from operations and decommissioning and of spent fuel. The disposal of low level waste will not be part of the fixed unit price service. Operators will be responsible for making their own arrangements for the disposal of low level waste from operations and decommissioning and will be required to meet these costs from operational expenditure for operational low level waste, and from the Fund for decommissioning low level waste.

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<sup>11</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008



**2.13** We anticipate that operators will request that the Government provide them with a fixed unit price at the time they seek approval for their Funded Decommissioning Programme. This will occur alongside the regulators' licensing and permitting processes. At this time, the Secretary of State would use the cost modelling methodology it has developed, together with information from the NDA's parametric cost modelling work on the estimated costs of disposal facilities, to determine the fixed unit price, including the appropriate risk premium. The cost modelling methodology is described in greater detail at paragraphs 4.5.1 – 4.5.39 and further information on when we expect to be in a position to set a fixed unit price for operators is set out in the Roadmap paragraphs 2.25 – 2.32 and Table 2. To help future operators with their planning, the Government would expect to give operators a non-binding indicative price at an earlier date than when the Government would be willing to provide them with a final fixed unit price.

### *Clarity on when operators will be able to pass title to and liability for their waste and spent fuel to the Government*

**2.14** Potential investors in new nuclear power stations also need certainty over the date at which they will transfer title to and liability for their intermediate level waste and spent fuel to the Government for disposal.

**2.15** The Government will agree to take title to and liability for an operator's waste according to a schedule that will be agreed at the same time as the operator's Funded Decommissioning Programme is approved and alongside setting a fixed unit price for the waste disposal service. We would expect the schedule to be aligned to the estimates for availability of disposal facilities (whatever those estimates are at the time operators come to the Government for a firm view on a fixed unit price). We expect that transfer of title and liability would not begin until after the operator's decommissioning programme has otherwise been completed. Firm estimates of dates for construction of disposal facilities are not yet available; however greater clarity will emerge as the Managing Radioactive Waste Safely (MRWS) programme proceeds.

**2.16** As with setting a fixed unit price, to help operators with their planning, the Government would expect to give operators a non-binding indicative schedule at an earlier date than when they approach the Government for firm agreement. The schedule for the Government to take title to and liability for intermediate level waste is expected to be different to the schedule for taking title to and liability for spent fuel.

**2.17** In return for giving operators certainty over when they will transfer title to and liability for their waste and spent fuel to the Government, we will set the level of the risk premium to take account of the risk to the Government that the construction of disposal facilities is not complete by the date or dates specified in the agreed schedule. This risk premium will be built into the fixed unit price for the waste disposal service.

- 2.18** If geological disposal facilities are not available by the dates agreed in the schedule, the Government would expect to take title to and liability for the waste according to the agreed schedule and would expect to continue storing it on the site where it has hitherto been stored until disposal facilities are available. We expect that this storage will be on the site of the power station as assumed in the Base Case (see paragraph 4.1.9). This could mean that the Government may need to secure the licensing of the part of the operator's site where the interim stores are located. In this case, the operator should be able to pursue de-licensing of the remainder of its site with the regulators. Operators may wish to consider this possibility when considering the design of their site, and in particular whether services for their interim stores will be shared with the rest of their site. The Government would meet costs for maintaining the interim stores during this period from the risk premium included in the fixed unit price. The Government will expect to base the schedule on conservative estimates of the availability of geological disposal facilities, to minimise the risk that the Government will need to take title to and liability for an operator's intermediate level waste and spent fuel before disposal facilities are available to dispose of these materials.
- 2.19** Conversely, if the operator is not in a position to send its waste for disposal in accordance with the agreed schedule, it will remain responsible (including financially) for maintaining the ongoing management of the waste until it is in a position to dispose of the waste and the operator of the disposal facility is able to find another time slot to receive that waste.
- 2.20** The Base Case referred to at paragraph 4.1.9 assumes a 40 year generating life for new nuclear power stations. This is a sensible assumption and operators would be expected to take account of it in their Funded Decommissioning Programme, although it will be open to operators to suggest alternative station lifetimes. If operators wish to modify their Programme during the generating period to extend the life of the station beyond that 40 year period, then as well as needing the agreement of the regulators to the change and the approval of Secretary of State to modify their Programme, they will need to revisit the schedule to determine and have the Secretary of State approve when the Government will take title to and liability for the waste.
- 2.21** Although we expect that a revised schedule would be agreed with the operator at the time of the application for a station's life extension, we expect that, if disposal facilities are available, the intermediate level waste and spent fuel from the first 40 years of operations would be sent for disposal at the time agreed in the original schedule. Decommissioning waste and the additional spent fuel from the extended station lifetime would be disposed of once the station has been decommissioned and according to dates agreed as part of the revised schedule.
- 2.22** If no disposal facilities were available at this time, the waste and spent fuel from the first 40 years of operations would remain in the operator's interim stores until disposal facilities are available and the station has completed its extended generation period and has been decommissioned. If disposal

facilities were still not available at this time, the Government would expect to take title to and liability for the operator's waste and spent fuel at this point in accordance with paragraph 2.18.

- 2.23** The Government may also want to set a new price for the disposal of the additional spent fuel. It would expect to do this at the time the operator seeks approval for the modifications to its programme. A new price would be set, based on the most up to date estimates of the actual costs of disposal. We are not ruling out the possibility that operators may wish to negotiate up front a price for waste for, say, 60 years of operation; for example, by taking an option on the additional 20 years worth of spent fuel. This would require the approval of the Secretary of State.
- 2.24** The approach described above to set a fixed unit price for the disposal of intermediate level waste and spent fuel and to agree a schedule for the Government to take title to and liability to these materials will be tested with the financial industry and will be subject to ensuring compliance with EU State Aid law.

## Roadmap to set out an indicative timeline for publication of cost estimates for waste management, disposal and decommissioning and a fixed unit price for waste disposal

- 2.25** The indicative timeline below sets out when further detail on the costs and payments for waste management, disposal and decommissioning for new nuclear power stations will be published. This timeline is for information only and we are not seeking comments on it through the consultation.

### *Updated estimates of the likely total costs for waste management, disposal and decommissioning*

- 2.26** To derive robust updated estimates of the costs of waste management and decommissioning for new nuclear power stations, the Government is developing a cost model that will enable it to produce a range of likely costs, as well as giving the Government information on the level of certainty of those costs. Paragraphs 4.5.1 – 4.5.39 set out for consultation the cost modelling methodology that the Government proposes to use to develop estimates of these costs.
- 2.27** Operators of new nuclear power stations will be expected to calculate their own cost estimates for waste management, disposal of low level waste and decommissioning for inclusion in the Decommissioning and Waste Management Plan (DWMP) they will submit to the Secretary of State. Operators will also be expected to submit to the Secretary of State their estimates of the volumes of intermediate level waste and spent fuel that their station will produce throughout its generating life and from decommissioning. Operators' own estimates will differ from those produced by the Government

as they will be specific to the nuclear power reactor design, site and other operational decisions of the operator, rather than generic.

- 2.28** We are not setting out cost estimates at this stage. The indicative timeline in Table 2 sets out when we expect to be in a position to publish updated estimates of the total costs of waste management, disposal and decommissioning.

### *A methodology for establishing a fixed unit price for the disposal of intermediate level waste and spent fuel in a geological disposal facility*

- 2.29** As set out in the Nuclear White Paper<sup>12</sup> and in paragraphs 2.9 – 2.13 of this consultation, the Government will provide certainty to operators of new nuclear power stations on the costs of disposing of their intermediate level waste and spent fuel, by setting a fixed unit price for this service. In return for this certainty, the Government will include in the fixed unit price a significant risk premium set over and above expected costs to help ensure that the operator bears the risks around uncertainty in waste disposal costs and to provide the taxpayer with material protection.
- 2.30** The Government expects to determine the appropriate level for the fixed unit price, drawing on the cost modelling work carried out by BERR and by the Nuclear Decommissioning Authority (NDA). We plan to publish further information on the methodology we will use to determine the fixed unit price, as set out in Table 2.

### *A methodology for determining the contributions that operators should make to meet their full share of waste management costs*

- 2.31** The Government has stated as policy<sup>13</sup> that operators of new nuclear power stations must set aside funds over the generating life of the power station to cover their full share of waste management and disposal costs.
- 2.32** We are working on a methodology to determine how the fixed costs of building a geological disposal facility should be apportioned to and shared between operators of new nuclear power stations<sup>14</sup>. The indicative timeline sets out when we expect this methodology to be available. This methodology will help determine the contributions which operators should make to meet their full share of the costs of waste disposal. Determination of an operator's full share of waste disposal costs will inform the fixed unit price that the Government will set for disposal of intermediate level waste and spent fuel.

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<sup>12</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

<sup>13</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

<sup>14</sup> This breakdown of costs presupposes disposal of higher activity new build waste in a UK geological disposal facility built by or on behalf of the Government. In the event that alternative waste disposal strategies were put forward by operators and were acceptable to the Secretary of State an assessment of the full share of waste disposal costs so incurred would fall to be determined on a case by case basis.

**Table 2: Indicative timeline for publication of cost estimates for waste management, disposal and decommissioning and a fixed unit price for waste disposal**

Indicative Date	Action
2008 Q1-Q2	<ul style="list-style-type: none"> <li>● Publish for consultation: cost modelling methodology for estimating the costs of waste management, disposal and decommissioning, and Funded Programme Guidance.</li> </ul>
2008 Q2-Q3	<ul style="list-style-type: none"> <li>● DEFRA to publish White Paper on Managing Radioactive Waste Safely and invite communities to express an interest in discussions about potential involvement in the siting process.</li> <li>● NDA develop their parametric cost modelling exercise so that outputs can be incorporated in BERR's cost modelling.</li> <li>● Methodology to determine how the fixed costs of building a geological disposal facility should be apportioned to and shared between operators of new nuclear power stations is expected to be made available.</li> </ul>
2008 Q3-Q4	<ul style="list-style-type: none"> <li>● Publish consultation responses and Government response on the BERR website.</li> <li>● Develop further refined cost estimates.</li> <li>● Undertake an external peer review of BERR's cost model.</li> <li>● Test the price methodology for establishing an indicative fixed unit price for the disposal of intermediate level waste and spent fuel with the financial industry.</li> </ul>
2008 Q4-2009 Q1	<ul style="list-style-type: none"> <li>● Publish finalised guidance on an acceptable Funded Decommissioning Programme.</li> <li>● Publish cost model with our updated estimates of total costs for waste management, disposal and decommissioning.</li> <li>● Publish methodology for establishing an indicative fixed unit price for the disposal of intermediate level waste and spent fuel.</li> </ul>
Mid – late 2009	<ul style="list-style-type: none"> <li>● Earliest date for a possible operator to request a fixed unit price for the disposal of intermediate level waste and spent fuel.</li> </ul>

## *Clarity on what is included in the fixed unit price for disposal of intermediate level waste and spent fuel*

**2.33** The fixed unit price that the Government will set for operators of new nuclear power stations for disposing of their intermediate level waste and spent fuel will be based on an estimate of the costs of disposing of these materials in a geological disposal facility. This costing will include the following items:

- Estimate of costs of disposing of intermediate level waste in a geological disposal facility<sup>15</sup>;
- Estimate of costs of disposing of spent fuel in a geological disposal facility<sup>16</sup>;
- Significant risk premium to cover:
  - the risk that the eventual costs of building a geological disposal facility to dispose of intermediate level waste and spent fuel are higher than estimated; and
  - the risk that geological disposal facilities are not available when required by the agreed schedule for the Government to take title to and liability for the waste.

**2.34** Table 3 gives further detail on the items that will be paid for from the Fund and those which are included in the fixed unit price.

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<sup>15</sup> This estimate includes a contribution towards the fixed costs of constructing a geological disposal facility.

<sup>16</sup> This estimate includes a contribution towards the fixed costs of constructing a geological disposal facility.

**Table 3: Summary of principal costs streams and how they will be met**

<b>Cost</b>	<b>How cost will be met</b>	<b>Included in fixed unit price?</b>
Decommissioning the station	Independent Fund	No
Low Level Waste (LLW)		
● Packaging and disposal of LLW from operations, including transport	Operational Expenditure	N/A
● Packaging and disposal of LLW from decommissioning, including transport	Independent Fund	No
Intermediate Level Waste (ILW)		
● Conditioning and packaging of operational ILW	Operational Expenditure	N/A
● Building and maintenance of interim stores for ILW <sup>17</sup>	Independent Fund	No
● Conditioning and packaging of decommissioning ILW	Independent Fund	No
● Transport of operational and decommissioning ILW for disposal	Independent Fund	No
● Disposal of operational and decommissioning ILW	Independent Fund	Yes
Spent Fuel (SF)		
● Operation of fuel ponds during the generating life of station	Operational Expenditure	N/A
● Operation of fuel ponds after the generating life of station	Independent Fund	No
● Building and maintenance of interim stores for SF <sup>18</sup>	Independent Fund	No
● Transport of SF for disposal	Independent Fund	No
● Encapsulation of SF for disposal	Independent Fund	No
● Disposal of all SF	Independent Fund	Yes

17 If the interim stores are built as part of the station construction, the costs of their construction will not be met from the Fund.

18 If the interim stores are built as part of the station construction, the costs of their construction will not be met from the Fund.

<b>Cost</b>	<b>How cost will be met</b>	<b>Included in fixed unit price?</b>
<p>Non-radioactive hazardous waste</p> <ul style="list-style-type: none"> <li>● Managing and disposing of non-radioactive hazardous waste from operations</li> <li>● Managing and disposing of non-radioactive hazardous waste from decommissioning</li> </ul>	<p>Operational Expenditure</p> <p>Independent Fund</p>	<p>N/A</p> <p>No</p>
<p>Planning</p> <ul style="list-style-type: none"> <li>● Decommissioning planning before start of generation</li> <li>● Pre-closure decommissioning planning</li> <li>● Any planning carried out during decommissioning</li> </ul>	<p>Operational Expenditure</p> <p>Independent Fund</p> <p>Independent Fund</p>	<p>N/A</p> <p>No</p> <p>No</p>
<p>Other Costs</p> <ul style="list-style-type: none"> <li>● All other costs associated with operating the site until end of its generating life. These costs include, but are not necessarily limited to, those associated with maintaining the infrastructure necessary for the operator to be a holder of a nuclear site licence<sup>19</sup></li> <li>● All other costs associated with operating the site after end of its generating life and until the site licence is surrendered. These costs include, but are not necessarily limited to, those associated with maintaining the infrastructure necessary for the operator to be a holder of a nuclear site licence<sup>20</sup></li> </ul>	<p>Operational Expenditure</p> <p>Independent Fund</p>	<p>N/A</p> <p>No</p>

19 These costs are likely to include the costs of security for the site, site monitoring, ongoing maintenance at the site (other than maintenance of the interim stores for intermediate level waste and spent fuel) and liaison with the regulators.

20 These costs are likely to include the costs of security for the site, site monitoring, ongoing maintenance at the site (other than maintenance of the interim stores for intermediate level waste and spent fuel) and liaison with the regulators.



- 2.35** If construction of geological disposal facilities is not complete when required by the agreed schedule (as described in paragraph 2.18), the Government might have to take title to and liability for an operator's waste before disposal facilities are available. In these circumstances the Government would need to carry out other waste management activities. These might include:
- maintaining safe and secure interim storage from the point at which the Government takes title to the waste until it can be disposed of in a geological disposal facility;
  - conditioning and encapsulating SF in a form suitable for disposal (we assume that it will not be possible to do this in advance of disposal);
  - re-licensing part of the reactor site to enable the Government to take title to the interim stores;
  - transporting ILW and SF to the geological disposal facility;
  - the possibility that the Government may have to pay to clean up any contamination on the site of the interim stores, or to re-package the waste or re-build the stores;
  - decommissioning the interim stores and cleaning up the residual site.
- 2.36** Some of these, such as the costs of transport of waste and spent fuel, the encapsulation of spent fuel and the decommissioning of the interim store will be costs for which the operator will have made provision in the Fund (see Table 3), but not as part of the fixed unit price. In the circumstances set out above, the amounts that operators have budgeted for these costs (set out in the Decommissioning and Waste Management Plan that has been agreed with the Secretary of State) will pass to the Government when title to and liability for the waste transfers, to cover the costs of performing these services (and operators will be expected to make provision under their approved Funded Decommissioning Programme to enable this transfer to take place). Other potential costs, such as paying for further maintenance of waste or spent fuel in interim stores or the re-packaging of the waste or re-building of the stores, will be met by the Government, but will have been factored in to the risk premium added to the fixed unit price to cover the risk that construction of disposal facilities is not complete by the time required by the agreed schedule.
- 2.37** The Government would also expect to reduce the risk of incurring these costs by ensuring that due diligence is carried out at the operator's interim store before taking title to and liability for the waste and spent fuel in the store. The due diligence exercise would provide the Government with reassurance that the interim store has been constructed and maintained according to the required specification and that the operator has met its obligations in relation to waste packaging and storage. The costs of this exercise would be met by the operator from contributions it will have made to the Fund for this purpose. The Government would not expect to agree to take title or liability in accordance with the terms of the schedule until any remedial work that is found to be necessary has been carried out at the operator's expense.

## *Schedule of Payments for the waste disposal service*

- 2.38** We expect that the moneys to cover the fixed unit price for the waste disposal service will be paid to the Government as title to and liability for each operator's waste is transferred to the Government. However, we are considering whether there may be a case for some of this amount to be paid to the Government during the power station's generating life. If the Government determines that this would be necessary, we would agree a schedule of payments with each operator at the same time as the Funded Decommissioning Programme is approved. This would ensure that operators are able to design their Fund and investment policies so that early payments can be made during the generating life of the station whilst also ensuring that the Fund, taking into account anticipated growth, would reach the target amount (adjusted to reflect the interim payments made in relation to waste disposal). The operator will be responsible for making good any shortfall or risk of shortfall in the accumulated funds held by the Fund.
- 2.39** The Government will expect to retain the power to take title to and liability for intermediate level waste and/or to spent fuel before the end of the generating life of the station, if a disposal route became available during that period. The Government would expect to discuss with operators in individual cases to determine arrangements that would ensure that their waste Fund was adequate to fund payments at this time.
- 2.40** The Government would expect to enter into an agreement with the operator, once the fixed unit price for the waste disposal service, the schedule for the Government to take title to and liability for the waste and spent fuel and a schedule of payments have been set. This agreement would cover issues such as the abort or termination costs that would be payable by the operator if it later chose not to use the Government waste disposal service.



# Section 3: Financing decommissioning, waste management and waste disposal from new nuclear power stations

## Setting a framework through the Energy Bill

- 3.1** The Energy Bill was introduced to Parliament in January 2008<sup>21</sup>. The Government intends to ensure that the operators of new nuclear power stations meet the full costs of decommissioning and their full share of waste management and disposal costs. It will do this by imposing new legal duties on operators in this regard and creating new powers for the Secretary of State to ensure that operators meet those duties under the Energy Bill.
- 3.2** As introduced to Parliament, the clauses in the Energy Bill:
- Require operators of any new nuclear power stations to submit a Funded Decommissioning Programme for approval by the Secretary of State for Business, Enterprise and Regulatory Reform. The Funded Decommissioning Programme must set out:
    - the steps operators will take to decommission the installation, clean up the site and manage waste (including spent fuel) produced during its electricity generating life and through its subsequent decommissioning;
    - the estimated costs of taking these steps;
    - how operators intend to meet those costs; and
    - details of the financial security to be put in place to meet the costs identified.
  - Give the Secretary of State a power to approve the Funded Decommissioning Programme, approve it subject to modifications or conditions or to reject it.
  - Impose a duty on operators to comply with the Funded Decommissioning Programme by making it an offence if they fail to do so.

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<sup>21</sup> Energy Bill, Session 2007-08, Bill 53 07-08

- Give the Secretary of State powers:
  - to require information from the operator, any persons responsible for the Fund, and any other persons with obligations under the programme to find out whether they are complying with the programme.
  - where the operator, the persons responsible for the Fund or any other persons with obligations under the programme are not complying with the programme:
    - to obtain information from other bodies corporate “associated” with the operator (to enable the Secretary of State to consider whether to impose obligations on such persons); and
    - to direct persons in breach to take the action necessary to bring themselves back into compliance.
- Enable the Secretary of State to require operators and persons responsible for the Fund to carry out regular reviews of the Funded Decommissioning Programme.
- Give the Secretary of State powers to approve modifications to the Funded Decommissioning Programme that might be proposed by the nuclear operator from time to time and, in certain circumstances, to require modifications.
- Give the Secretary of State powers to make guidance and regulations that set out what an approvable Funded Decommissioning Programme may contain and thereby assist operators in understanding their obligations under the Bill.
- Seek to ensure that for waste management liabilities which arise during the station’s electricity generating life, there is flexibility in terms of what will be regulated for financial purposes. This is because it may be sufficient to permit operators to pay for some of these costs from their revenue (for example).

**3.3** The Energy Bill also ensures that operators must inform the Secretary of State of any material amendments or modifications to a Funded Decommissioning Programme and seek approval for them. The Energy Bill gives the Secretary of State powers to ensure that persons responsible for managing a Fund (for example) must inform the Secretary of State of any material changes to such a Fund. In each case, modifications to the programme which do not fall within the scope of any regulations made under clause 46 will require approval by the Secretary of State.

**3.4** It also gives the Secretary of State powers to impose obligations under the Funded Decommissioning Programme on bodies corporate, which are associated with the operator (e.g. the parent company of the operator).

**3.5** The clauses in the Energy Bill do not detract from the operator’s underlying duties under the existing law to decommission and clean up the site on which the nuclear power station stands. These duties flow from the site licence issued to operators of all nuclear power stations under Section 1 of the

Nuclear Installations Act 1965 by the Health and Safety Executive (HSE). Under Section 4 of that Act the HSE has the power to attach conditions to such licences, and it is in this way that the operator is under an existing legal duty to decommission any plant or process on the site which may affect safety.

- 3.6** The Energy Bill is principally concerned with ensuring that the operator makes prudent financial provision to cover the discharge of these duties safely and responsibly. Despite all that follows in the guidance concerning the creation of an independent Fund and the duties of that Fund (e.g. to verify cost estimates and to invest, accumulate and disburse monies for the relevant purpose) the operator remains under a legal duty in the Energy Bill to ensure that prudent financial provision remains in place. Where the provisions and protections anticipated in the guidance (which the Secretary of State would expect to see set out in an approved programme) do not (in individual cases) generate sufficient moneys by the relevant date to enable the operator to discharge its duties in this regard, the operator remains liable to undertake those duties and to ensure that it has sufficient moneys to enable it to do so.

### *Enforcement of the approved Funded Decommissioning Programme*

- 3.7** After a Funded Decommissioning Programme has been approved, if there is a breach of the programme, the Secretary of State would expect to use the information gathering powers conferred on him under the Energy Bill to find out more information about the breach before taking further action. Once this information has been gathered it is intended that there be a flow of communications between the operator and the Secretary of State in an attempt to try to remedy the breach in an informal manner.
- 3.8** Where such an approach proves unworkable or is inappropriate for other reasons (e.g. because of the urgency or seriousness of the case) the Secretary of State is required to consult with the HSE, the Environment Agency (EA) in England and Wales and, if necessary, the Department of Environment for Northern Ireland (DOENI) before imposing a direction requiring the person to comply with the programme or remedy the effect of any unlawful conduct.
- 3.9** The direction is likely to require the operator of the power station to comply with an obligation or remedy the breach and will set out the conditions as to how it is to be remedied and the timeframe in which the remedy is to take place. Where the direction is not complied with, the Secretary of State may apply to the High Court for an order compelling the operator to comply with the direction. Where this order is granted and not complied with the normal penalties for contempt of court would apply. The Secretary of State may also initiate a prosecution (although in sufficiently pressing or serious cases he might initiate such proceedings prior to taking all the steps referred to).

## *Protecting the Taxpayer*

- 3.10** The Government has confidence in the safety, security and environmental framework for the UK's nuclear power sector.
- 3.11** A number of industries – for example oil and gas production – have associated long-term decommissioning costs and potential environmental impacts. However, the Government recognises that health and safety and environmental considerations and the necessarily very long-term nature of nuclear waste disposal requires particularly robust arrangements to ensure that the tax payer does not pay the costs of nuclear waste and decommissioning. That is why the Government is keen to put in place one of the most robust regulatory frameworks in the world to ensure that nuclear generators will meet these costs in all credible circumstances.
- 3.12** It is impossible to eradicate all risk. The Government cannot rule out the possibility that there could be extreme circumstances where the Government could be called upon to step in to protect the public and the environment<sup>22</sup>.
- 3.13** The Energy Bill requires the Secretary of State to exercise his powers to approve Funded Decommissioning Programmes with a view to ensuring that the arrangements put in place by operators are prudent. The Bill and Guidance provide numerous stringent layers of protection to ensure that the tax payer does not pay for waste and decommissioning costs under normal commercial operation, but also in the event of an unlikely scenario, such as the early closure of the power station or the insolvency of the power station operator. These layers of protection are as follows:
- 3.14** Firstly, it will be a criminal offence to operate a new nuclear power station unless there is an approved Funded Decommissioning Programme in place. In this situation the company which operates the station will be liable for the offence as will officers of the company where the acts concerned are committed with the consent or connivance of those persons or are attributable to their neglect.
- 3.15** Operators and persons responsible for the moneys set aside by the operator will be expected to obtain independent advice about the accuracy of cost estimates (for example) provided by the operator prior to submission of the Programme to the Secretary of State. That Programme must be approved by the Secretary of State who must do so with a view to ensuring that it makes prudent provision for decommissioning and clean up of the station and the site on which it stands, including the financial provision for those activities. We are establishing the Nuclear Liabilities Financing Assurance Board (NLFAB) to ensure the Secretary of State has access to expert advice when he considers whether to approve a Programme.

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<sup>22</sup> In the unlikely event of a major incident Government would, of course, step in if necessary to protect the public and the environment in accordance with its International Obligations, although these liabilities are not within the scope of the Energy Bill. However, insofar as such an incident gave rise to a liability in relation to the costs of dealing with waste management and decommissioning, the Bill is intended to ensure this liability does not fall on the taxpayer.

- 3.16** Secondly, it will be an offence to fail to comply with such Programmes (for which the company and its officers may be liable) and the Secretary of State will have the power to issue a direction to persons in breach of the programme to bring themselves into compliance and remedy the effects of their conduct where necessary. Where a person fails to comply with a direction, the Secretary of State may apply to the High Court for an order compelling that person to do so. Where the person fails to comply with a court order that person would be in contempt of court which is punishable with a fine or imprisonment. Provision of false information to the Secretary of State by an operator, officers of the operator, persons responsible for managing the Fund or any other persons with obligations under the Programme is a criminal offence.
- 3.17** Thirdly, the draft guidance stipulates that the funding arrangements under the Programme must include proposals for contributions by the power station operator to an independent Fund from day one of generation. The contributions must aim at a target amount which is at least 100 per cent of the inflation, risk and uncertainty adjusted value of the operator's predicted liabilities and the Secretary of State will expect to approve an appropriate contingency in the target amount for the Fund. To minimise the risk of any shortfall in the Fund, there will be:
- Provision for regular monitoring of the liabilities and the Fund and re-assessment of the expected costs, feeding through to increases in the contributions to the Fund if necessary. Reviews of the decommissioning and waste liabilities will be verified by trustees relying on independent advice from third parties where necessary, submitted to the Secretary of State (who may take advice from NLFAB) and published.
  - Provision by the operator to manage and mitigate the risk that the Fund is insufficient for whatever reason (e.g. because the power station closes early, before all the contributions to the Fund have been made). Security against such risk may take the form of an upfront endowment to the Fund together with a provision to front load contributions during the early years of the power station's generating life combined with additional security approved by the Secretary of State, for example insurance, financial instruments or parent company guarantees. More detail is set out in paragraphs 5.10.1 – 5.10.7.
- 3.18** Fourthly, the Energy Bill will give the Government the power to impose obligations on corporate bodies associated with the operator for example parent companies or sister companies, if (for example) the operator fails to comply with the programme but also where it is necessary to secure that prudent provision is made for decommissioning and waste management.
- 3.19** Finally, the Government expects the Fund to be domiciled in the UK and the Energy Bill will provide a statutory protection for the independent Fund in the event of the insolvency of the operator in relation to claims brought by its creditors.



- 3.20** In the extreme circumstance that the several layers of protection set out in the Energy Bill were judged unable to meet actual or anticipated costs, then the Government would need to consider whether it was necessary to step in to protect the public and the environment. In those circumstances, the alternative options would be, or would have been, extensively explored, including the possibility of finding a suitable buyer for the power station where appropriate. Intervention by the Government would be a last resort and the Government would in any event expect to call first on the money set aside by the operator into the Fund.
- 3.21** It is because the Energy Bill and guidance will put in place numerous stringent layers of protection and contingency arrangements that the Government considers it very unlikely that the operation of new nuclear power stations will give rise to circumstances in which the public purse is called upon.

## Regulations under the Energy Bill

- 3.22** The Bill also contains powers to make regulations in a number of areas including the preparation, content, implementation and modification of Funded Decommissioning Programmes.
- 3.23** The purpose of the regulations in the areas referred to would be to set out the matters which the Funded Decommissioning Programme must address (in order to gain approval by the Secretary of State) as well as a framework that would enable operators to understand their obligations under a Funded Decommissioning Programme more fully.
- 3.24** The Bill allows the Secretary of State to set out how fees which he has the power to charge the operator under the clauses are to be determined and when they will be required to be paid. These could include certain costs incurred by the NLFAB in assessing programmes submitted by operators.
- 3.25** The Bill also allows regulations to be made which set out the circumstances in which the Secretary of State may dis-apply the procedure for modifying an approved Funded Decommissioning Programme as set out in the Bill. The Government is not consulting in this document on the information which follows in relation to what these regulations might contain, and it is included for information only however, you are welcome to comment on what is set out below if you wish to do so.
- 3.26** The Government's current intention is to set a materiality threshold whereby an operational and technical change to a power station which materially increase the operator's cost estimates of decommissioning liabilities or the amount of waste disposal liabilities would require the submission of a proposal to modify the Funded Decommissioning Programme to the Secretary of State for approval.

- 3.27** The Government's current thinking is that an increase in the operator's decommissioning liabilities as a result of an operational or technical change by more than a certain percentage (five per cent for example) of the net present value (adjusted for inflation) of the then current estimate of the operator's decommissioning liabilities would be considered material. The Government is also considering a materiality threshold in relation to an increase in the amount of waste disposal liabilities.
- 3.28** Such a modification of the Funded Decommissioning Programme would require the approval of the Secretary of State in accordance with the procedure laid down in clauses 44 and 45 of the Energy Bill. Paragraphs 5.6.12 – 5.6.13 contain further information in this regard. This information has been included in the draft guidance because (however the limit is calculated or formulated) it is expected to form an important part of the operator's duties in relation to review and reporting hence it is useful to refer to it there also. Inclusion is not intended in any way to undermine the statement made in paragraph 3.25.
- 3.29** As referred to in paragraphs 5.6.1 – 5.6.16 and Annex A, the operator will be expected to prepare an annual report setting out operational and technical changes to the site which have an effect on the cost estimates of decommissioning liabilities or the amount of waste disposal liabilities included in the Funded Decommissioning Programme. The Government is considering only requiring those operational or technical changes which increase the net present value (adjusted for inflation) of the then current estimates of the costs of the decommissioning liabilities by more than a certain percentage (1 per cent for example) to be reported in the annual report. The Government is also considering a de minimis reporting threshold in relation to an increase in the amount of waste disposal liabilities.
- 3.30** Regulations may set out what criteria would need to be met when obtaining advice from independent third parties in relation to the approval or modification of a Funded Decommissioning Programme in order for the Secretary of State to rely on that third party advice. This would enable the Secretary of State to rely on advice in relation to cost estimates or other financial matters under the programme which is provided by parties independent of the operator and the Secretary of State but obtained by the operator. It would also enable him to rely on advice obtained by the persons responsible for the Fund. Regulations would set out the circumstances in which the Secretary of State would rely on that advice but these might include when the programme is initially approved, when the Secretary of State is considering a proposed modification from the operator, or when he is considering the regular reports submitted by the operator or the Fund.
- 3.31** Regulations that form part of the Chapter of the Bill on the decommissioning and clean-up of nuclear sites will be made using the negative procedure.

- 3.32** This Bill also contains an order making power that will enable the Secretary of State to designate, by way of affirmative procedure, which technical matters are designated technical matters. The power enables the Secretary of State to designate certain steps by way of waste management and disposal, which are undertaken during the generating life time of the station as “designated technical matters”. Designation means that the operator will be required to provide cost estimates in relation to these activities, and details of the security put in place to cover them, as well as details of the technical steps to be taken to manage the waste concerned. Operators are required to provide to the Secretary of State for approval details of all the technical steps to be taken to manage waste, decommission and dispose of waste undertaken throughout the life of the station both when it is generating electricity and subsequently.
- 3.33** The regulations set out above will be made as part of the implementation of the Energy Bill in 2009.

## Guidance under the Energy Bill

- 3.34** We stated in the Nuclear White Paper<sup>23</sup> our intention to publish for public consultation two sets of draft guidance on what an approvable Funded Decommissioning Programme should contain. Sections 4 and 5 of this document contain this draft guidance for consultation which will assist operators in understanding certain of their obligations under the Energy Bill. The Funded Decommissioning Programme consists of two parts, a Decommissioning and Waste Management Plan and a Funding Arrangements Plan.
- 3.35** The first set of guidance (the Decommissioning and Waste Management Plan guidance set out in Section 4) will assist businesses in setting out and costing the steps involved in decommissioning a new nuclear power station and managing hazardous waste and spent fuel in a way which the Secretary of State may approve. This guidance also sets out the cost modelling methodology the Government expects to use to generate its own prudent estimates of the costs of decommissioning, waste management and waste disposal for new nuclear power stations.
- 3.36** This consultation document also contains a Roadmap that sets out an indicative timeline under which the Government expects to publish its cost estimates and to be in a position to set a fixed unit price for waste disposal. This Roadmap (set out in paragraphs 2.25 – 2.32 and Table 2) is included for information only and views are not requested on it.
- 3.37** The second set of guidance (The Funding Arrangement Plan guidance set out in Section 5) will assist operators in setting out acceptable proposals for how sufficient funds will be accumulated to meet the costs identified and sets out the Guiding Principles against which the Government will assess the funding proposals submitted by nuclear operators for approval under the Energy Bill.

- 3.38** This guidance is statutory and will be laid before Parliament to ensure transparency. As guidance it cannot compel but taken together is intended to set out the matters which the Secretary of State may take into account in determining whether to approve or approve with modifications, or modify a Funded Decommissioning Programme.

### *Future development of the guidance*

- 3.39** Both sets of guidance will be amended as appropriate to take account of future changes in circumstances.
- 3.40** There are a number of individual requirements set out in the guidance that each operator will need to address in its Funded Decommissioning Programme. In assessing a programme, the Secretary of State and his advisors, the Nuclear Liabilities Financing Assurance Board, will consider whether it adequately meets the Secretary of State's objective of ensuring that the operator has sufficient and secure arrangements in place as tested against the principles outlined in the guidance itself. The Secretary of State recognises that circumstances will vary for each operator and that differing approaches may be appropriate. As such the guidance is not intended to be prescriptive.

### *Scope of the duty to obtain an approved Funded Decommissioning Programme*

#### **Geographical scope**

- 3.41** The clauses in the Bill extend to England, Wales and Northern Ireland. This means that persons applying for a nuclear site licence to install or operate new nuclear power stations on sites in those parts of the UK would be required to submit a Funded Decommissioning Programme for approval by the Secretary of State (and would be subject to the other provisions in this part of the Bill).
- 3.42** So far as Scotland is concerned, if there is a change in policy towards new nuclear power stations there, the Government would seek to extend the provisions in the Energy Bill to Scotland at the earliest available opportunity.

#### **Categories of installation covered by scope**

- 3.43** Only persons who apply for a site licence to install and / or operate a new nuclear installation for the purpose of generating electricity will be required to submit a Funded Decommissioning Programme for approval by the Secretary of State (and subject to the other provisions in this part of the Bill as normal).
- 3.44** The Government recognises that in due course energy companies may come forward with proposals to develop other nuclear installations and facilities that will both sustain and support the development of a growing nuclear energy sector. Should the sector develop in this way, the Government would seek to ensure that developers of installations or facilities, which are constructed for a

purpose connected to the generation of electricity by nuclear power stations, cover their full decommissioning costs and full share of waste management costs. The Energy Bill gives the Secretary of State a power to extend the clauses in the Energy Bill to such installations so as to ensure this objective is met.

- 3.45** The powers in the Energy Bill should enable the Secretary of State to extend the clauses to a new fuel fabrication plant for example, since the purpose of such a facility would seem to be connected to the generation of electricity. The power could not be used in relation to those hospitals which use radioactive materials for diagnostic and curative purposes, or research facilities whose activities are not connected to electricity generation.

### **Categories of waste included in the scope**

- 3.46** The Decommissioning and Waste Management Plan section of the Funded Decommissioning Programme must cover all categories of hazardous waste and spent fuel.
- 3.47** The Funding Arrangements Plan section of the Funded Decommissioning Programme must cover all decommissioning and waste management and waste disposal costs which are incurred after the end of generation plus any waste costs that arise during generation as specified in an order made under clause 41(5) of the Energy Bill.
- 3.48** Ongoing waste management costs during the generating lifetime of the station (which are not specified in an order under clause 41(5)) must be met by the operator from its operational expenditure, and not from the Fund.

### **Residual Liabilities**

- 3.49** The owner of a power station at the time of its decommissioning will normally be responsible for any residual liability beyond that identified in the Decommissioning and Waste Management Plan. The Government is not removing that residual liability from the owner. As regards third party claims attributable to the owner or the operator of the power station or site, these will be a matter for the general law and will be unaffected by the Funded Decommissioning Programme.

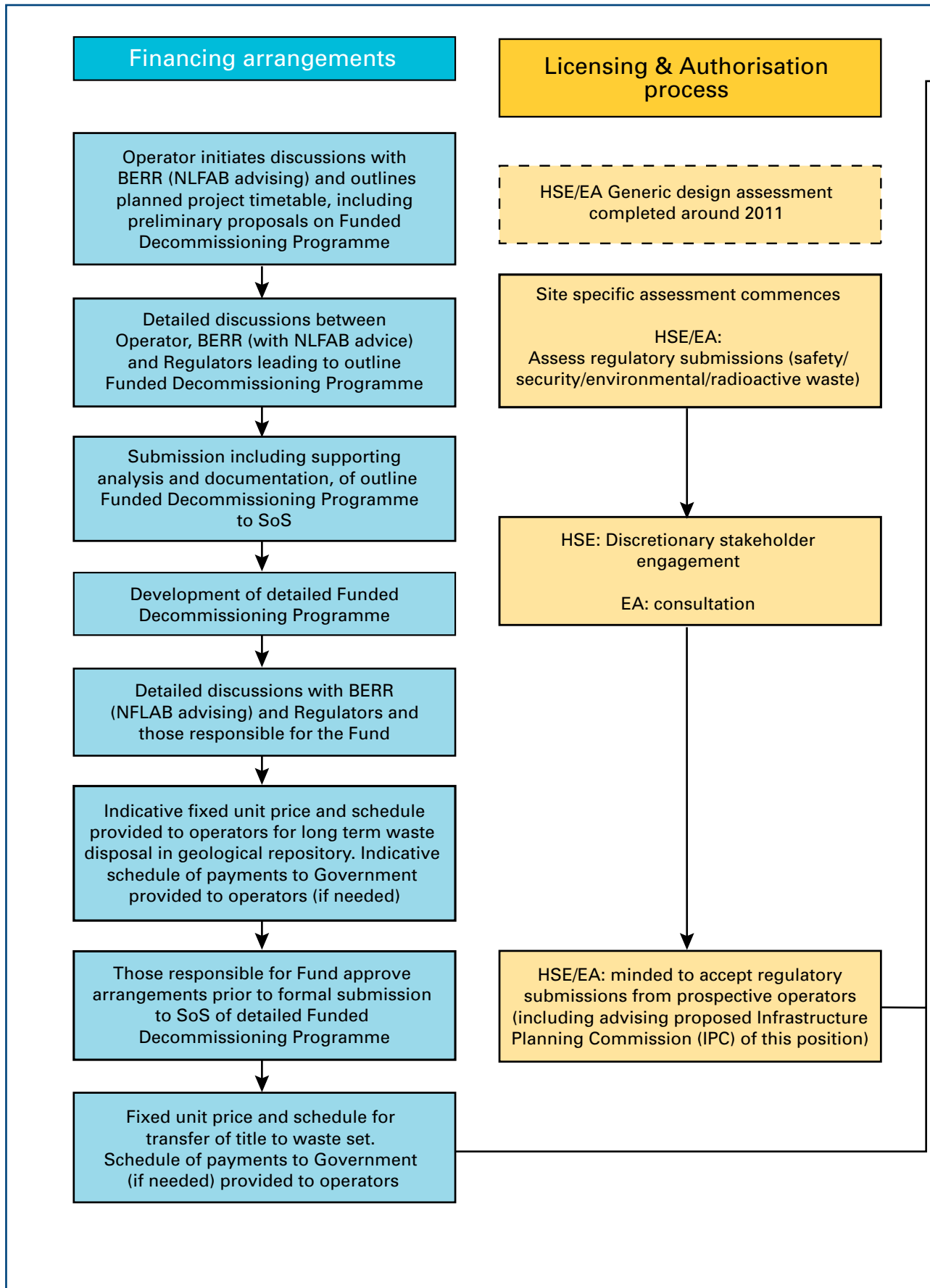
## Indicative process for submitting and following a Funded Decommissioning Programme

**3.50** Chart 1 sets out an indicative process for the submission, approval and regular review of a Funded Decommissioning Programme. It aims to explain how decision points for the approval of a Funded Decommissioning Programme fit with the licensing and authorisation process of the regulators. The chart also explains how the licensing and authorisation process would feed in to the proposed new planning regime currently being considered as part of the Planning Bill<sup>24</sup>.

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<sup>24</sup> Planning Bill, Session 2007-08, Bill 71 07-08

**Chart 1: Indicative process for submitting and following a Funded Decommissioning Programme**



Formal approval of Funded Decommissioning Programme by SoS (following advice from NLFAB and regulators)

Construction

HSE: Grant Licence to install/operate  
EA: Issue environmental permits and radioactive waste disposal authorisation

Commission station  
Commence electricity generation  
Operator starts contributing to the Fund

HSE (following consultation with EA) issue Consent for Active Commissioning

Annual review by the operator of the DWMP

Annual report on size and performance of the Fund by Fund

Notification (and submission of modified programme, if necessary) to SoS in the event of significant changes between stipulated reviews

Quinquennial in-depth review of Funded Decommissioning Programme (DWMP and FAP) and report to SoS. Fund to confirm/revise contribution schedule

HSE perform periodic review of decommissioning strategy  
EA perform periodic reviews of permits and authorisations

Assessment by SoS (with advice of NLFAB) of the Fund's performance in accumulating sufficient funds to finance the D&WM costs (Re)approval of modifications to the programme by SoS (if necessary)





# Section 4: Decommissioning and Waste Management Plan guidance

## Contents

- 4.1 Introduction and Background to the Base Case
- 4.2 Generic Decommissioning and Waste Management Plan (DWMP) – The Base Case
- 4.3 The Base Case – Working Assumptions List
- 4.4 Classification of Costs arising under the Base Case
- 4.5 Methodology for Cost Calculations

# 4.1 Introduction and Background to the Base Case

- 4.1.1** This Section contains guidance for operators of new nuclear power stations to assist them in drawing up a Decommissioning and Waste Management Plan (DWMP). The Decommissioning and Waste Management Plan is that part of the Funded Decommissioning Programme which addresses those matters referred to in clause 41(7)(a) and (b) of the Energy Bill<sup>25</sup> (namely details of the steps to be taken in relation to the technical matters and estimates of the costs likely to be incurred in taking those steps). Together with separate Funding Arrangement Plan (FAP) guidance, this guidance provides information on what a Funded Decommissioning Programme should contain. This guidance is set out in draft for consultation.
- 4.1.2** To ensure that the Government can have confidence that operators of any new nuclear power stations make adequate financial provision which meets the full costs of decommissioning and their full share of waste management costs, it will be important to understand the likely costs of these activities. As the Nuclear White Paper<sup>26</sup> announced, the Secretary of State has embarked on a programme to determine robust estimates of the costs of waste management, disposal and decommissioning.
- 4.1.3** Under the Energy Bill 2008, as part of gaining approval to build a new nuclear power station, operators will be required to submit to the Secretary of State a Funded Decommissioning Programme for approval. Clause 41(7) of the Energy Bill sets out the matters which the Programme is required to address. Clause 41(7)(a) requires a potential operator of a new station to set out details of the steps to be taken under the programme in relation to what are described as the “technical matters”. The technical matters are details of the matters referred to in clause 41(5) of the Energy Bill (i.e. the decommissioning of the installation, cleaning up of the site, and waste management and disposal activities undertaken during the generating life of the station).
- 4.1.4** Clause 41(7)(b) requires the Funded Decommissioning Programme to contain estimates of the costs likely to be incurred in connection with what are described as the designated technical matters. The designated technical matters are the steps set out in the Programme and required to be taken in relation to:

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<sup>25</sup> Energy Bill, Session 2007-08, Bill 53 07-08

<sup>26</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008

- decommissioning the installation;
- cleaning up the site; and
- such aspects of waste management and disposal activities undertaken during the generating life time of the station as the Secretary of State may specify by order<sup>27</sup>.

**4.1.5** Operators should meet the costs of designated technical matters from the independent Fund they will be expected to set up and these matters will be subject to regulation under the Funding Arrangement Plan (FAP) they submit for approval under the Energy Bill. (These issues are explored in greater detail in the Funding Arrangements Plan guidance also issued for consultation by the Secretary of State under the Energy Bill). The Secretary of State would expect the costs of technical matters, which are not designated, to be met by the operator from operational expenditure. These costs will not be subject to regulation under the FAP, although the activities to which they relate will still be subject to regulation under the DWMP. The costs of technical matters, which are not designated, are comparatively low, and payments will need to be made at the time these expenses are incurred; that is during the generating life time of the station when the operator should have ready access to sufficient monies to meet such costs without reference to the Fund. It is also anticipated that such costs may be incurred at regular intervals so it is appropriate that these costs should be met from operational expenditure to avoid unnecessary cost and burdens arising around payment of moneys into the Fund only to withdraw the same moneys a relatively short period of time later (e.g. within the same financial year). Further information on the Secretary of State's proposals for the technical matters that should be designated technical matters is set out in paragraphs 4.4.1 – 4.4.4 and Table 6.

**4.1.6** In this guidance that part of the Funded Decommissioning Programme which concerns the technical matters and that part of the programme which sets out the estimates of the costs likely to be incurred in connection with the designated technical matters are together referred to as the Decommissioning and Waste Management Plan (the DWMP).

**4.1.7** The Secretary of State will expect the DWMP for the new nuclear power station to cover the technical waste management, disposal and decommissioning steps to be taken over the full lifecycle of the station, and include an estimate of the costs associated with the operator's liabilities with regard to these steps. This is in addition to existing regulatory scrutiny to ensure safety, security and environmental protection in relation to these aspects of a nuclear power station, and is intended to contribute to the overall objective of the Funded Decommissioning Programme, of ensuring that operators will accrue sufficient funds to meet the costs of waste management and decommissioning as they fall due.

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<sup>27</sup> The Secretary of State would expect to make such an order in accordance with the timing set out in paragraphs 3.22 – 3.33

**4.1.8** The aim of the DWMP should be to ensure the safe, environmentally responsible and prudent decommissioning of the nuclear power station and management and disposal of waste. By forming part of the programme required to be approved by the Secretary of State, it will ensure that planning for these activities is carried out prior to the construction of the power station and is based on established techniques and steps. The DWMP should contain accurate and up to date estimates of the costs of taking such steps to enable sufficient moneys to be accumulated on behalf of the operator to pay for such steps to be taken. Our proposals for reviewing and reporting against the DWMP are set out in paragraphs 4.2.6 – 4.2.8 and in greater detail in paragraphs 5.6.1 – 5.6.16 and in Annex A.

## Base Case

**4.1.9** To enable the Government to estimate the potential costs of waste management and decommissioning and to ensure that operators make adequate provision for their funding, we are setting out a means by which waste may be managed and disposed of and decommissioning carried out that will be costed by or on behalf of the Secretary of State. We call this the “Base Case”. It builds on existing policy and regulations for waste management and decommissioning. It also makes additional assumptions to ensure that it represents a realistic and prudent way to estimate the costs of and carry out these activities. A summary of some of the assumptions underlying the Base Case is set out below. Reference should be made to Table 5 for the full text of the assumptions:

### *Management and disposal of low level waste (LLW)*

- LLW from operations and decommissioning will be disposed of promptly after it has been generated in a suitable disposal facility.
- For the purposes of the Base Case, we assume that disposal will be at the facility currently operating in West Cumbria or a successor facility.

### *Management and disposal of intermediate level waste (ILW)*

- ILW from operations and decommissioning will be stored in safe and secure interim stores assumed to be on the site of the nuclear power station until decommissioning has been completed and a geological disposal facility is available to take the waste.

- ILW from operations and decommissioning will be disposed of in a geological disposal facility. The Government's view is that it would be desirable to dispose of ILW from new nuclear power stations in the same geological disposal facilities as legacy waste and we will explore this through the MRWS programme. The size of a programme of new nuclear power stations and the specification of the site chosen for the geological disposal facility may impact on whether all of the new waste could be stored in the same disposal facility as legacy waste. We will keep this under review as work on the MRWS programme continues and will ensure that our cost modelling methodology is able to accommodate alternative scenarios.
- The Government will set a fixed unit price for the disposal of ILW and a schedule for taking title to and liability for this waste. This will be set in accordance with the process described in paragraphs 2.9 – 2.24.

### *Management and disposal of spent fuel*

- Spent fuel will be stored in cooling ponds for a period of time, followed by storage in safe and secure interim stores on the site of the power station until decommissioning has been completed and disposal facilities are available to accommodate it.
- The Base Case assumes that spent fuel will be disposed of in a geological disposal facility. The Government's view is that it would be desirable to dispose of spent fuel from new nuclear power stations in the same geological disposal facilities as legacy waste and we will explore this through the MRWS programme. The size of a programme of new nuclear power stations and the specification of the site chosen for the geological disposal facility may impact on whether all of the spent fuel from new nuclear power stations could be stored in the same disposal facility as legacy waste. We will keep this under review as the work on the MRWS programme continues and will ensure that our cost modelling methodology is able to accommodate alternative scenarios.
- The Government will set a fixed unit price for the disposal of spent fuel and a schedule for taking title to and liability for this waste. This will be set in accordance with the process described in paragraphs 2.9 – 2.24.

### *Type of fuel*

- The Base Case assumes that new nuclear power stations will use uranium or uranium oxide fuel

- The Nuclear White Paper set out that new nuclear power stations should proceed on the basis that spent fuel will not be reprocessed. Thus the base case assumes that there will be no re-processing of the uranium fuel, and spent fuel will be disposed of after it has been used.

### *Interim storage*

- Operators will be obliged to provide safe and secure interim storage facilities that are technically capable of being maintained or replaced to last for at least 100 years from the time when waste or spent fuel is first emplaced in them<sup>28</sup>.
- Operators will be obliged to provide the stores as they are needed, subject to agreement with regulators and the Secretary of State.

### *Effect of reactor design on the Base Case*

- The Base Case for different reactor designs will be the same wherever it is appropriate.
- It will be based on a single station operating for an assumed life of 40 years.

### *Definition of decommissioning*

- Decommissioning begins when the reactor is shut down with no intention of further use for the purpose of generating electricity.
- Decommissioning ends when all station buildings and facilities have been removed and the site has been returned to an end state which has been agreed with the regulators and the planning authority.

### *Site end state*

- The Base Case assumes that the final site end state will be such that all station buildings and facilities have been removed, the site returned to a state agreed with the regulators and the planning authority and released from the control of the nuclear site licence.
- This is likely to be a state similar to “Greenfield”, depending on the state of the site prior to construction of the station.

**4.1.10** The Nuclear White Paper set out the Government’s conclusion on waste and decommissioning:

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<sup>28</sup> It should be noted that operators will be obliged to maintain their interim stores until the date or dates specified in the schedule agreed with the Government for when the Government will take title to and liability for each operator’s intermediate level waste and spent fuel. In any event, the Government considers that waste can and should be stored in safe and secure interim storage facilities until a geological disposal facility becomes available.

*“Having reviewed the arguments and evidence put forward, the Government believes that it is technically possible to dispose of new higher-activity radioactive waste in a geological disposal facility and that this would be a viable solution and the right approach for managing waste from any new nuclear power stations. The Government considers that it would be technically possible and desirable to dispose of both new and legacy waste in the same geological disposal facilities and that this should be explored through the Managing Radioactive Waste Safely programme. The Government considers that waste can and should be stored in safe and secure interim storage facilities until a geological facility becomes available.*

*Our policy is that before development consents for new nuclear power stations are granted, the Government will need to be satisfied that effective arrangements exist or will exist to manage and dispose of the waste they will produce.*

*The Government also believes that the balance of ethical considerations does not rule out the option of new nuclear power stations.<sup>29</sup>”*

- 4.1.11** This conclusion has informed the provisions in the Base Case which operators of any new nuclear power stations will be expected to have regard to when developing the programme they will submit to the Government. There will be flexibility to allow operators to propose other effective ways of dealing with decommissioning and waste management if they choose to do so. We intend the Base Case to take effect as guidance issued under clause 50(5) of the Energy Bill. Operators’ Funded Decommissioning Programmes will be considered on a case by case basis. When considering whether to approve an operator’s programme, the Secretary of State will have regard to whether it achieves the overall outcome of ensuring a prudent means for carrying out and estimating the costs of waste management, disposal and decommissioning.
- 4.1.12** As well as meeting current regulatory requirements, each operator’s programme must ensure that it sets out plans for the management and disposal of all hazardous waste streams and that it includes all the elements for which operators will need to make financial provision. Once a programme is approved by the Secretary of State, the operator will be required to follow it. The operator will, however, be allowed to amend the programme, subject to approval from the Secretary of State.
- 4.1.13** Operators will be required to update the programme to reflect modifications such as operational or technical changes to a nuclear power station that would have an impact on the estimates of decommissioning costs. Paragraph 5.6.12 set out further detail on modifying a Funded Decommissioning Programme including in relation to technical aspects.
- 4.1.14** We have worked with the regulators, the NDA and key stakeholders to develop the Base Case.

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<sup>29</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008



## *Cost estimates*

**4.1.15** The Base Case is a key input to our work to develop robust estimates of the costs of waste management and decommissioning for new nuclear power stations. To provide further inputs, we have carried out an exercise to develop our understanding of the waste inventories that would be produced by different generic reactor types, to determine the volume and types of waste that new nuclear power stations could produce. To derive estimates of the costs of waste management and decommissioning for new nuclear power stations we are developing a cost model that will enable us to produce a range of likely costs, as well as giving us information on the level of certainty of those costs. Our cost modelling methodology is set out in more detail in paragraphs 4.5.1 – 4.5.39.

## 4.2 Generic Decommissioning and Waste Management Plan (DWMP) – The Base Case

**4.2.1** This section sets out a generic lifecycle Decommissioning and Waste Management Plan (DWMP) for new nuclear power stations. This is also referred to as the Base Case. It shows the principal phases of the nuclear power station lifecycle, and indicates their likely timescales. The plan presented here is generic, and serves two principal functions:

- It sets down the key points which the Secretary of State would expect a DWMP to address;
- It acts as a vehicle to enable the Secretary of State to calculate the range of costs associated with decommissioning and hazardous waste management and disposal. This will allow the Secretary of State to scrutinise Funded Decommissioning Programmes submitted by operators effectively when considering whether to approve them, to approve them subject to conditions or modifications, or to modify them<sup>30</sup>.

**4.2.2** It is being published as guidance to future operators of new nuclear power stations on the waste management, disposal and decommissioning steps that the Government considers should be included in and costed as part of the DWMP that they will need to submit to the Secretary of State for approval. This includes both those steps which the operator will be responsible for costing and those steps that will be included in the fixed unit price that the Government will set for disposal of intermediate level waste and spent fuel. It is recognised that DWMPs for individual power stations will differ in detail, as they will be based on a specific reactor design at a specific site run by a particular operator. If, however, a DWMP broadly conforms to the base case presented here, the Secretary of State would expect to approve it (or approve it with relatively minor modifications). As set out above, clause 42(4) of the Energy Bill requires the Secretary of State to exercise his powers in relation to the approval, approval subject to modifications or rejection of a Funded Decommissioning Programme with the aim of ensuring that it makes prudent provision for the technical matters including the designated technical matters. Thus an operator's DWMP will be assessed against whether it achieves the

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<sup>30</sup> The formulation of the cost estimates does not detract from the duty which the Secretary of State expects persons responsible for the Fund should be under to verify cost estimates (as appropriate) put forward by the operator both at the time of first approval of the Funded Decommissioning Programme and pursuant to periodic reviews as set out in the Funding Arrangement Plan guidance.

overall outcome of ensuring a prudent means for carrying out and estimating the costs of waste management, disposal and decommissioning.

- 4.2.3** Operators of new nuclear power stations will be expected to have regard to the Base Case as set out below when developing the Funded Decommissioning Programme they will submit to the Secretary of State. However, there will be flexibility to allow operators to propose alternative ways of carrying out waste management, disposal and decommissioning if they choose to do so. If an operator puts forward a DWMP based on an alternative to the Base Case, the onus will be on the operator to justify its proposal and the Secretary of State would expect to consider DWMPs based on alternatives to the Base Case on a case by case basis.

### *Level of Detail required in DWMP*

- 4.2.4** The DWMP that an operator submits to the Secretary of State for approval must cover each stage of the power station's life, from the permitting stage through to decommissioning and final site clearance. It must describe each stage in sufficient detail to demonstrate that the operator has a realistic, clearly defined and achievable plan for dealing with all of the waste streams that will be produced by its power station and for remediating the site after use. The DWMP must be sufficiently detailed to ensure that each element of the decommissioning and waste management work can be costed accurately. The Secretary of State recognises that techniques for decommissioning, waste management and disposal may change over time and that the operator may wish to provide further information on how each part of its plan will be carried out during the generating life of the station or to modify its programme (subject to approval by the Secretary of State) from time to time.
- 4.2.5** The Energy Bill requires that operators seek the Secretary of State's approval to modify their DWMP; for example, if new advances in technology or established practices mean that they wish to change the way they will carry out waste management, disposal or decommissioning. Operators will also be expected to seek the approval of the Secretary of State to modify their plan to reflect changes in the regulators' requirements, which affect the way they will carry out these activities. Equally, operators should seek his approval to modify their DWMP at any time during operation or as their station nears decommissioning if they wish to include further detail on their plan for the decommissioning process. In any case, operators will need the approval of the Secretary of State to modify their DWMP and any changes suggested will need to be fully justified.

### *Review and Reporting*

- 4.2.6** Operators will be required to review their DWMP periodically to ensure that it remains up to date and that any changes to the cost estimates as a result of operational and technical changes, or any other changes that may have occurred, have been assessed. Operators will be required to report on such

changes which will impact on the cost estimates in their annual report and will be required to conduct a re-assessment of the DWMP and cost estimates set out in the DWMP as part of their quinquennial report or, annually where the cumulative effect of undertaking such operational or technical changes in an annual period would have a material effect on the operator's liabilities. In addition, operators will be required to report on an ad hoc basis any changes that will affect the cost estimates over and above a materiality threshold. Operators will be required to notify the Secretary of State of that change and propose for approval a modification to the DWMP to take account of such change.

- 4.2.7** Operators must also demonstrate to the Secretary of State that, as part of their basic record keeping structure, they will maintain an accurate record of the design of, at least, the nuclear island(s), and the persons responsible for managing the Fund must be satisfied with these arrangements.
- 4.2.8** Further detail on procedures for reviewing and reporting on an operator's Funded Decommissioning Programme is set out in paragraphs 5.6.1 – 5.6.16 and in Annex A.

### *Change of control/ownership of the operator*

- 4.2.9** Where the identity of the operator changes during the life time of the station (whether during construction, electricity generation or subsequently) the Energy Bill requires the Funded Decommissioning Programme to be re-submitted for approval, which would include the DWMP.
- 4.2.10** Paragraphs 5.12.1 – 5.12.9 contain more detail about what the operator would be expected to do in relation to that aspect of the Funded Decommissioning Programme where there is a change of control affecting it. That said, where a change in the entity or entities which control the operator occurs, the Secretary of State would not expect to require re-submission of the DWMP, save where the change of control led to changes to the steps which the operator proposed to undertake to decommission the station and to manage and dispose of waste and which are set out in the DWMP.

### *Relationship between the Base Case and regulatory requirements*

- 4.2.11** The Base Case is built on existing policy and regulatory requirements; although it also makes additional assumptions to ensure it represents a comprehensive and prudent means of estimating the costs of waste management, disposal and decommissioning.
- 4.2.12** The emphasis on ensuring that sufficient financial provision is made to cover the liabilities and thus encouraging public confidence means that the Base

Case may differ in some cases from the assumptions and requirements of the safety, security and environmental regulators. This is due to the different objectives that the Secretary of State and the regulators are aiming to meet. However, any differences are intended only to add further protections to ensure that operators make adequate financial provision to meet their liabilities. They will build on and should not contradict or weaken the requirements of the regulators, and operators will always be obliged to satisfy the regulators that their plans are acceptable before they can be approved by the Secretary of State.

**4.2.13** As set out above, we have worked with the regulators, the NDA and key stakeholders to develop the Base Case.

### *Waste Minimisation*

**4.2.14** As part of their DWMP, operators will be expected to set down the steps they will take throughout all of the stages of the station's life to ensure that waste volumes and the costs of waste management and decommissioning are minimised throughout reactor life; for example, by careful segregation of waste arisings and by minimisation of secondary wastes<sup>31</sup>. Operators will be expected to have regard to the waste hierarchy in determining this part of their plan.

### *Structure of the DWMP*

**4.2.15** As stated above, the Base Case is built on existing policy and regulations, as well as making additional assumptions to ensure it represents a comprehensive and adequate means of estimating the costs of waste management, disposal and decommissioning. The Secretary of State would expect operators to use these assumptions when devising their DWMPs or if not to explain what assumptions they have made which the Secretary of State may approve as he sees fit, by reference to the prudence threshold laid down in the Energy Bill.

### *The Phases of the Base Case to be set out in the DWMP*

**4.2.16** The Secretary of State would expect the DWMP to be divided into four principal phases, which are shown as a timeline in Chart 2.

- Phase 1 – Preparation and permitting – those activities required to obtain regulatory approval to begin construction of the power station;
- Phase 2 – Construction and commissioning;

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<sup>31</sup> Secondary wastes are those wastes which are generated unavoidably as part of the waste management process itself.

- Phase 3 – Operation of the station, including any refurbishment required during the generating life and management of operational wastes;
- Phase 4 – Decommissioning – dismantling the station, disposing of remaining waste and remediating the site to a condition agreed with the regulators.

**4.2.17** To the extent practicable, operators will be expected to follow this outline of phases in preparing their DWMPs.

### *Phase 1 – Preparation and Permitting*

**4.2.18** This phase of the Base Case covers those activities which must be undertaken before construction of a nuclear power station can begin. During this phase, potential operators will:

- Generate a suite of detailed, station-specific, design documents;
- Obtain regulatory approval for the health, safety and environmental aspects of the proposed new build, and hence permission to begin construction;
- Make a successful planning application;
- Prepare a DWMP for submission to the Secretary of State and obtain approval for that plan, as part of the Funded Decommissioning Programme.

**4.2.19** As part of their DWMP, operators will be required to submit estimates of the costs of waste management and decommissioning. Operators will also be required to include in their estimates the costs of waste disposal. To enable the Government to determine the costs of disposal for intermediate level waste (ILW) and spent fuel, operators will need to calculate their expected ILW and spent fuel inventory for the assumed generating life of the station and provide this information to the Secretary of State. The Government will set a fixed unit price to operators for disposal of these materials, as well as a schedule for when the Government will take title to and liability for the waste and spent fuel (as set out in paragraphs 2.9 – 2.24). The information on waste inventory and the agreed fixed unit price will enable operators to predict the waste disposal costs that they will need to meet from the Fund.

**4.2.20** The Government is considering whether there is a case for some elements of this fixed unit price for the disposal of intermediate level waste and spent fuel to be paid to the Government during the power station's generating life; for example, to cover the costs of building additional capacity in a geological disposal facility as they are incurred. If the Government considers that this would be necessary, we would agree a schedule of payments with each operator at same time as the Funded Decommissioning Programme is approved.

**4.2.21** The Secretary of State will expect to retain the power to take title to and liability for intermediate level waste and/or to spent fuel before the end of the generating life of the station, if a disposal route became available during that period and if it was sensible to do so. The Secretary of State would expect to discuss with operators in individual cases to determine arrangements that would ensure that their Fund was adequate to fund payments at this time.

**4.2.22** Further information on setting a fixed unit price for disposal of ILW and spent fuel can be found in paragraphs 2.9 – 2.13.

### *Phase 2 – Construction*

**4.2.23** In this phase of the Base Case the power station is constructed and commissioned. During this period operators will obtain all the regulatory approvals required to begin operation.

### *Phase 3 – Operation*

**4.2.24** The base case assumes a 40 year generating life for the reactor. This is considered to be a sensible assumption, which is in line with assumptions made in the Government's cost modelling work published alongside the Energy Review<sup>32</sup>.

**4.2.25** In the DWMP they submit to the Government, operators should identify any planned outages for reactor refurbishment. Any wastes arising during routine maintenance or during refurbishment are assumed to be managed in the same way as wastes from routine operation. Further, any waste arising from emergency repairs or refurbishments are to be managed in the same way as wastes from routine operation.

**4.2.26** The operator is responsible for ensuring that all the required facilities for the storage and any necessary processing of operational wastes are available as and when needed.

### *Operational Low Level Waste Management*

**4.2.27** The Base Case assumes that low-level wastes arising during operation will be packaged on site by the operator and dispatched to a disposal facility promptly after they have been generated. Operators will be required to ensure that any facilities needed for packaging are available on site, although it is assumed that low-level waste will not be conditioned on site and that conditioning facilities will therefore not be needed. The arrangements for packaging must be consistent with those currently acceptable to the UK regulators. The operator is responsible for transport of the waste to the disposal facility, although the transfer may be undertaken by a third party, acceptable to the UK regulators,

under contract to the operator. The Base Case assumes that title to the waste will pass to the disposal facility operator when an individual package has been transported to the facility, and accepted by the facility operator as meeting the relevant acceptance criteria. It is assumed that low level waste will be disposed of in the UK, and that disposal facilities will be available when required, at a price to be agreed between the plant operator and the operator of the disposal service. Operators will be required to meet the costs of managing and disposing of operational low level waste. These costs will be met from operational revenues.

### *Operational Intermediate Level Waste Management*

**4.2.28** The Base Case assumes that intermediate level waste arising during operations will be stored in safe and secure interim storage facilities on the site of the power station pending disposal in the same geological disposal facilities to be used for the disposal of legacy intermediate level waste from our existing nuclear facilities. The arrangements for conditioning and storage must be consistent with those currently acceptable to the UK regulators.

### *Spent Fuel Management*

**4.2.29** The Base Case assumes that new nuclear power stations will use uranium or uranium oxide fuel. The Nuclear White Paper set out the following conclusion on reprocessing:

*“Having reviewed the arguments and evidence put forward, and in the absence of any proposals from industry, the Government has concluded that any new nuclear power stations that might be built in the UK should proceed on the basis that spent fuel will not be reprocessed and that plans for, and financing of, waste management should proceed on this basis.<sup>33</sup>”*

**4.2.30** For this reason, the Base Case assumes that there will be no reprocessing of the uranium fuel, and spent fuel will be disposed of after it has been used.

**4.2.31** Spent fuel should be cooled on site in cooling ponds for an appropriate period, and then transferred to an on site interim store pending disposal. .

### *Non-radioactive Hazardous Wastes from operations*

**4.2.32** The Base Case assumes that non-radioactive hazardous wastes from operations will be managed according to regulatory requirements and current practices and will be disposed of using established disposal routes.

**4.2.33** The operational period ends at the point at which decommissioning begins.

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<sup>33</sup> Meeting the Energy Challenge, A White Paper on Nuclear Power, URN 08/525, January 2008



## Phase 4 – Decommissioning

**4.2.34** The Base Case assumes that decommissioning begins when the station is shut down and ceases generating electricity for the last time.

**4.2.35** The principal Stages of the decommissioning process are described in Table 4.

**Table 4: Outline of principal stages of decommissioning**

<b>De-fuelling</b>	<ul style="list-style-type: none"> <li>● De-fuelling reactor for the last time and transferring the resulting spent fuel to the fuel pond.</li> </ul>
<b>Stage 1</b>	<ul style="list-style-type: none"> <li>● Conditioning and packaging of potentially mobile wastes (e.g. spent resins)</li> <li>● Transfer of conditioned wastes to interim storage to await final disposal.</li> </ul>
<b>Stage 2</b>	<ul style="list-style-type: none"> <li>● Demolition of non-essential non-radioactive facilities (e.g. turbine hall and administrative buildings that will not be needed to manage the decommissioning process)</li> <li>● Transfer of spent fuel remaining in cooling pond to interim store</li> </ul>
<b>Stage 3</b>	<ul style="list-style-type: none"> <li>● Dismantling of reactor and any other structures remaining on site and management and disposal of resulting waste.</li> <li>● Disposal of intermediate level waste and spent fuel from interim stores<sup>34</sup>.</li> <li>● Remediation of site</li> <li>● De-licensing</li> </ul>

**4.2.36** Decommissioning of the power station and remediation of the site is the responsibility of the site operator, and will be undertaken in accordance with a structured programme agreed with the regulators. This programme will be set out in the operator’s DWMP and submitted to the Government for approval. Whilst detailed plans will be decided on a site-by-site basis; the Base Case assumes that the process will comprise the following generic steps.

### *De-fuelling the reactor and removal of spent fuel from site*

**4.2.37** The reactor will be de-fuelled, and the resulting spent fuel stored in cooling ponds for an appropriate period of time before being transferred to the interim

<sup>34</sup> If disposal facilities are not available for the intermediate level waste and spent fuel at the time of the schedule agreed between the Government and the operator for the disposal of these materials, the Government would take title to and liability for these materials and would expect to continue to store them in the operator’s interim store. In this scenario, the operator should be in a position to pursue de-licensing of the rest of the site. Further detail is set out in paragraph 2.18.

store, pending transfer of title and liability to the Government. It is recognised that fuel from the latter stages of the reactor's life may have to remain on site for some years, because of the need to allow it to cool before transporting and disposing of it and this will be taken into account, along with the estimates of availability of geological disposal facilities, when the Secretary of State agrees a schedule with an operator for the Government to take title to and liability for their spent fuel. The operator is responsible for the encapsulation and transport of its spent fuel to the disposal facility.

### *Removal of operational and decommissioning intermediate level waste from site*

**4.2.38** Title to and liability for operational and decommissioning intermediate level waste will be transferred to the Government according to the schedule agreed when the Funded Decommissioning Programme is approved and as set out in paragraphs 2.14 – 2.24. This should enable waste to be removed from site when an appropriate disposal route is available. Before title and liability transfers, the operator will be expected to ensure all wastes are conditioned in a way which is consistent with the requirements of UK regulators at the time the waste is conditioned. Conditioning may be undertaken by another organisation, under contract to the operator, provided that the arrangements are acceptable to the UK regulators. The operator is responsible for the packaging and transport of its intermediate level waste to the disposal facility.

### *Removal of decommissioning low level waste from site*

**4.2.39** Low level waste arising from decommissioning is expected to be managed and disposed of in the same way as operational low level waste and the Base Case assumes prompt disposal.

### *Non-radioactive Hazardous Wastes from decommissioning*

**4.2.40** The Base Case assumes that non-radioactive hazardous wastes arising as a result of decommissioning will be managed according to regulatory requirements and current practices and will be disposed of using established disposal routes.

### *Decommissioning facilities*

**4.2.41** The operator's DWMP will be required to ensure that all facilities on site are decommissioned in accordance with a structured plan, which is acceptable to

the regulators and which should reduce the hazard presented by the site in a systematic manner.

### *Care and maintenance*

**4.2.42** The base case assumes prompt decommissioning of the reactor, with maintenance of storage facilities for intermediate level waste and spent fuel capable of lasting for at least 100 years from when waste or spent fuel is first emplaced in them. It is open to operators to propose a care and maintenance period in their DWMP submissions, but the inclusion must be agreed with the regulators and approved by the Secretary of State as part of the operator's Funded Decommissioning Programme<sup>35</sup>.

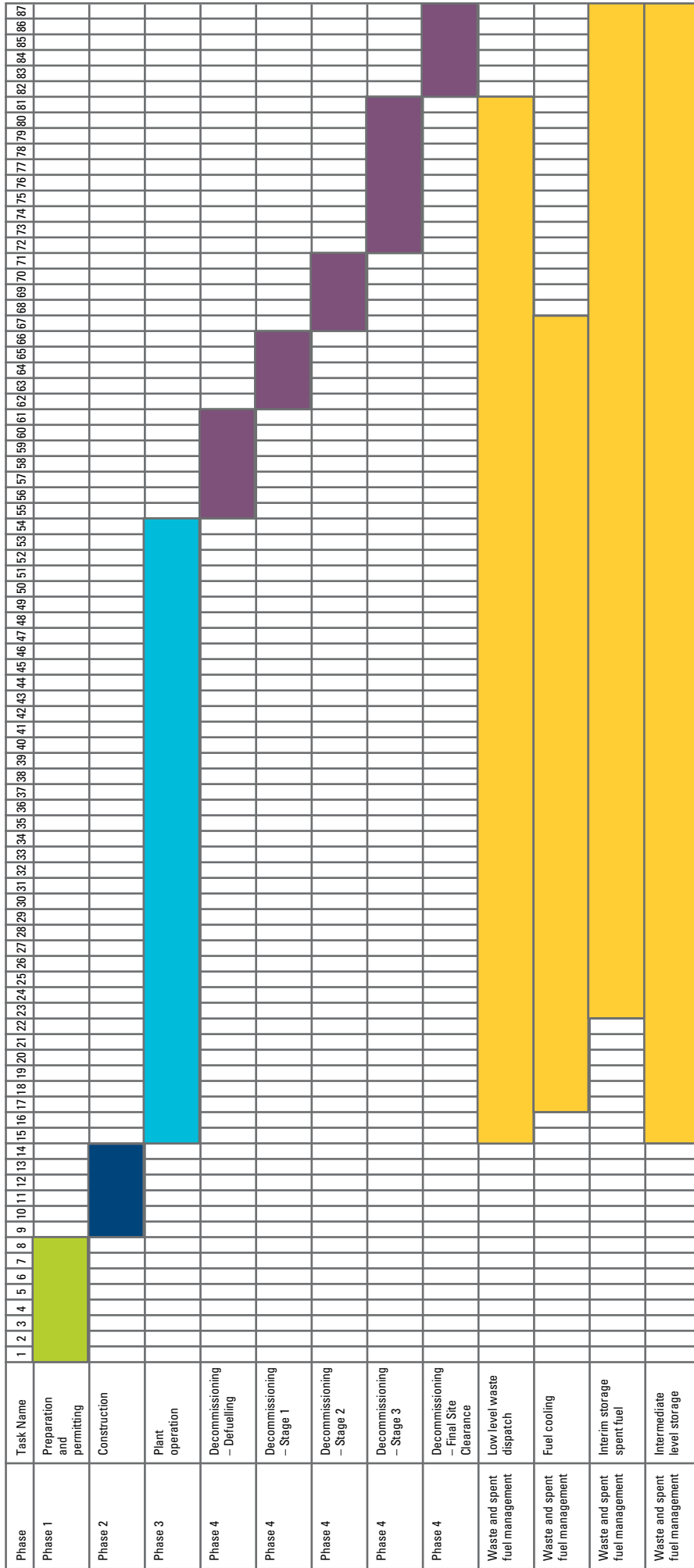
### *Site remediation*

**4.2.43** Decommissioning ends when all station buildings and facilities have been removed and the site has been returned to an end state which has been agreed with the regulators and the planning authority. This is likely to be a state similar to "Greenfield", depending on the state of the site prior to construction of the station. The end state must be consistent with the requirements for release of the site from the control of a nuclear site licence.

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<sup>35</sup> A care and maintenance period allows the benefits associated with radioactive decay (lower volumes of intermediate level waste and reduced doserates to decommissioning operators) to be realised. Prompt decommissioning, however, means that the site can be fully remediated on a shorter timescale. The balance between these issues may be considered by operators with reference to operational as well as design-specific considerations.

**Chart 2: Timeline setting out the phases of the Base Case to be set out in the DWMP**



- 1) Dates are years from start.
- 2) The lengths of the bar are estimates for a generic nuclear power station.
- 3) The Government will agree to take title and liability to an operator's waste according to a schedule that we expect to be agreed at the same time as their Funded Decommissioning Programme is approved and alongside setting a fixed unit price for the waste disposal service. We would expect the schedule to be aligned to the estimates for availability of disposal facilities (whatever those estimates are at the time operators come to us for a firm view on a fixed unit price). We expect that the schedule would not begin until after the operator's decommissioning programme has otherwise been completed.

## 4.3 Base Case – Working Assumptions List

**4.3.1** The complete sets of assumptions underlying the Base Case is set out in Table 5. A summary of the assumptions is set out in paragraph 4.1.9. As set out in paragraph 4.1.11, the Base Case does not prescribe the contents of a DWMP, so there will be flexibility for operators to suggest and make the case for alternative approaches to waste management, disposal and decommissioning if they choose. The Secretary of State will consider each DWMP on a case by case basis, although if a DWMP broadly conforms to the base case presented here, the Secretary of State would expect to approve it (or approve it with relatively minor modifications).

**Table 5: Assumptions underlying the Base Case**

### *Context and Decommissioning Strategy*

ISSUE	ASSUMPTIONS
<b>Regulatory regime</b>	The regulatory regime to be applied to waste management and decommissioning is that in force at the present time.
	Definitions of waste categories will remain unchanged.
	Dose limits for workers and the public will remain unchanged from those set out in the Ionising Radiation Regulations 1999 <sup>36</sup> .
<b>Definition of decommissioning and decommissioning costs</b>	Decommissioning begins when the reactor is shut down with no intention of further use for the purpose of generating electricity.
	Decommissioning ends when all station buildings and facilities have been removed and the site has been returned an end state which has been agreed with the regulators and the planning authority.
	Costs for decommissioning should be structured to ensure that the costs of management and infrastructure for the station under decommissioning are fully accounted for.
	Demolition and disposal of waste management facilities are regarded as part of the decommissioning activity.

<sup>36</sup> These regulations can be found at: <http://www.statutelaw.gov.uk/content.aspx?LegType=All+Legislation&title=ionising&Year=1999&searchEnacted=0&extentMatchOnly=0&confersPower=0&blanketAmendment=0&sortAlpha=0&TYPE=QS&PageNumber=1&NavFrom=0&parentActiveTextDocId=2778898&ActiveTextDocId=2778898&filesize=189255>

ISSUE	ASSUMPTIONS
<b>Care and maintenance</b>	The base case assumes no care and maintenance period after the reactor has been shut down and before decommissioning takes place.
<b>Site end state</b>	<p>The final site end state will be such that all station buildings and facilities have been removed, the site returned to a state agreed with the regulators and the planning authority and released from the control of the nuclear site licence ('de-licensed').</p> <p>This is likely to be a state similar to "Greenfield", depending on the state of the site prior to construction of the station.</p>
<b>Cost calculation</b>	Costs estimates will be calculated on a money of year basis (Escalation and/or discounting terms will be applied post the initial cost assessment)
<b>Effect of reactor design on base case</b>	<p>The base case for different reactor designs will be the same wherever it is appropriate.</p> <p>It will be based on a single station operating for an assumed life of 40 years.</p>
<b>Decommissioning techniques</b>	Decommissioning will be undertaken using equipment and techniques currently available.

## Waste Management

ISSUE	ASSUMPTIONS
<p><b>Intermediate Level Waste (ILW) management and disposal</b></p>	<p>ILW from operations and decommissioning will be stored in safe and secure interim stores on the site of the power station until decommissioning has been completed and a geological disposal facility is available to take the waste.</p>
	<p>ILW from operations and decommissioning will be disposed of in a geological disposal facility. It would be desirable to dispose of ILW from new nuclear power stations in the same geological disposal facilities as legacy waste and we will explore this through the Managing Radioactive Waste Safely (MRWS) programme. The size of a programme of new nuclear power stations and the specification of the site chosen for the geological disposal facility will have an impact on whether all of the new waste could be stored in the same disposal facility as legacy waste. We will keep this under review as the MRWS programme progresses and will ensure that our cost modelling methodology is able to accommodate alternative scenarios.</p>
	<p>Although the date at which a geological disposal facility will be available is as yet uncertain, increased certainty on planned dates will become available as the Managing Radioactive Waste Safely (MRWS) programme progresses.</p>
	<p>Conditioning and packaging waste in a form suitable for disposal will be the responsibility of the station operator.</p> <p>It is assumed that operational ILW will be conditioned and packaged as soon as reasonably feasible after it is produced, and before storage on-site.</p> <p>Conditioning costs for operational ILW are regarded as operational costs and will not be paid for from the Fund.</p> <p>Conditioning costs for decommissioning ILW will be met from the Fund.</p>

ISSUE	ASSUMPTIONS
<p><b>Intermediate Level Waste (ILW) management and disposal</b></p>	<p>The Government will set a fixed unit price for the disposal of ILW and a schedule for taking title to and liability for this waste. This will be set in accordance with the process described in paragraphs 2.9 – 2.24. Should the actual costs of providing the waste disposal service prove lower than expected, these lower costs will not be passed on to nuclear operators, who would have gained from certainty of a fixed price and would not have been exposed to the risk of price escalation.</p> <p>The fixed unit price payable to the Government<sup>37</sup> will be based on a conservative estimate of the costs of disposal of the waste in a Geological Disposal Facility. It will include provision for:</p> <ul style="list-style-type: none"> <li>● significant risk premium to cover:</li> <li>● the risk that the eventual costs of building a geological disposal facility to dispose of ILW are higher than estimated;</li> <li>● the risk that construction of geological disposal facilities is not complete at the agreed schedule for the Government to take title to and liability for an operator’s ILW.</li> </ul> <p>If the situation arises where construction of geological disposal facilities is not complete at the agreed schedule for the Government to take title to and liability for waste and the operator has otherwise completed its Funded Decommissioning Programme satisfactorily, the Government would take title to and liability for an operator’s waste before disposal facilities are available. In these circumstances the Government would need to provide other waste management services that might include:</p> <ul style="list-style-type: none"> <li>● paying for interim storage from the point at which the Government takes title to and liability for the waste until it can be disposed of in a geological disposal facility;</li> <li>● re-licensing part of reactor site to enable the Government to take title to and liability for the interim stores;</li> <li>● transporting ILW to the geological disposal facility;</li> <li>● the possibility that the Government may have to pay to clean up contaminated land on the site of the interim stores, or to re-package the waste/re-build the stores;</li> <li>● decommissioning the interim stores and the residual site.</li> </ul>

37 The Government’s policy on setting a fixed unit price for waste disposal and a schedule for taking title to and liability for the waste is set out in paragraphs 2.5 – 2.24. Views on this policy are not sought through this consultation.



ISSUE	ASSUMPTIONS
<p><b>Intermediate Level Waste (ILW) management and disposal</b></p>	<p>Some of these, such as the costs of transport of waste and the decommissioning of the interim store will be costs for which the operator will have made provision in Fund, but not as part of the fixed unit price. In the circumstances set out above, the amounts that operators have budgeted for these costs (set out in the costed decommissioning programme that has been agreed with the Secretary of State) will pass to the Government to cover the costs of performing these services. Other costs, such as paying for further maintenance of waste in interim stores or the potential for needing to re-package the waste or re-build the stores, will be met by the Government, but will have been factored into the risk premium added to the fixed unit price to cover the risk that construction of disposal facilities will not be complete at the agreed schedule.</p> <p>The schedule will contain an estimated date or series of dates for the transfer of title and liability. These dates will be linked to the estimated date for availability of disposal facilities to accept ILW from new nuclear power stations for disposal at the time when the schedule is agreed. We expect that the dates will be no sooner than that for the completion of decommissioning given in the operator's agreed Funded Decommissioning Programme. If, in the event, the Funded Decommissioning Programme is not completed to schedule, transfer of title to and liability for ILW, and all financial and other responsibility for the waste, will be deferred and responsibility will remain with the operator until the Funded Decommissioning Programme has been completed.</p> <p>The Secretary of State will expect to retain the power for the Government to take title to and liability for ILW before the end of the generating life of the station, if a disposal route became available during that period. The Secretary of State would expect to discuss with operators in individual cases to determine arrangements that would ensure that their Fund was adequate to fund payments at this time.</p>

ISSUE	ASSUMPTIONS
<p><b>Spent fuel (SF) management and disposal</b></p>	<p>New nuclear power stations will use uranium or uranium oxide fuel.</p>
	<p>The Nuclear White Paper set out that new nuclear power stations should proceed on the basis that SF will not be reprocessed. Thus the base case assumes that there will be no re-processing of the uranium fuel, and SF will be disposed of after it has been used.</p>
	<p>Spent fuel will be stored in cooling ponds for a period of time, followed by storage in safe and secure interim stores on the site of the power station until decommissioning has been completed and a geological disposal facility is available to accommodate it.</p>
	<p>Spent fuel will be disposed of in a geological disposal facility. It would be desirable to dispose of spent fuel from new nuclear power stations in the same geological disposal facilities as legacy waste and we will explore this through the Managing Radioactive Waste Safely (MRWS) programme. The size of a programme of new nuclear power stations and the specification of the site chosen for the geological disposal facility will have an impact on whether all of the spent fuel from new nuclear power stations could be stored in the same geological disposal facility as legacy waste. We will keep this under review as the MRWS programme progresses and will ensure that our cost modelling methodology is able to accommodate alternative scenarios.</p>
	<p>Although the date at which a geological disposal facility will be available is as yet uncertain, increased certainty on planned dates will become available as the Managing Radioactive Waste Safely (MRWS) programme progresses.</p>
<p>The Government will set a fixed unit price for the disposal of spent fuel and a schedule for taking title to and liability for this waste. This will be set in accordance with the process described in paragraphs 2.9 – 2.24. Should the actual costs of providing the waste disposal service prove lower than expected, these lower costs will not be passed on to operators, who would have gained from certainty of a fixed unit price and would not have been exposed to the risk of price escalation.</p> <p>The fixed unit price payable to the Government will be based on a conservative estimate of the costs of disposal of the spent fuel in a geological disposal facility. It will include provision for:</p>	

ISSUE	ASSUMPTIONS
	<ul style="list-style-type: none"> <li>● significant risk premium to cover:</li> <li>● the risk that the eventual costs of building a geological disposal facility to dispose of spent fuel are higher than estimated;</li> <li>● the risk that construction of geological disposal facilities is not complete at the agreed schedule for the Government to take title to and liability for an operator's spent fuel.</li> </ul> <p>If the situation arises where construction of geological disposal facilities is not complete at the agreed schedule for the Government to take title to and liability for waste and the operator has otherwise completed its Funded Decommissioning Programme satisfactorily, the Government would take title to and liability for an operator's waste before disposal facilities are available. In these circumstances the Government would need to provide other waste management services that might include:</p> <ul style="list-style-type: none"> <li>● paying for interim storage from the point at which the Government takes title to and liability for the SF until it can be disposed of in a geological disposal facility;</li> <li>● conditioning and encapsulating SF in a form suitable for disposal (we assume that it will not be possible to do this in advance of disposal);</li> <li>● re-licensing part of reactor site to enable the Government to take title to and liability for the interim stores;</li> <li>● transporting SF to the geological disposal facility;</li> <li>● the possibility that the Government may have to pay to clean up contaminated land on the site of the interim stores, or to re-build the stores;</li> <li>● decommissioning the interim stores and the residual site.</li> </ul>

ISSUE	ASSUMPTIONS
	<p>Some of these, such as the costs of transport of SF and the decommissioning of the interim store will be costs for which the operator will have made provision in their Fund, but not as part of the fixed unit price. In the circumstances set out above, the amounts that operators have budgeted for these costs (set out in the Funded Decommissioning Programme that has been agreed with the Secretary of State will pass to the Government to cover the costs of performing these services. Other costs, such as paying for further maintenance of SF in interim stores or the potential for needing to re-build the stores, will be met by the Government, but will have been factored into the risk premium added to the fixed unit price to cover the risk that construction of geological disposal facilities will not be complete in accordance with the agreed schedule.</p> <p>The schedule will contain an estimated date or series of dates for the transfer of title and liability to the Government. These dates will be linked to the estimated date for availability of disposal facilities to accept SF from new nuclear power stations for disposal at the time when the schedule is agreed. We expect that the date will be no sooner than that given for the completion of decommissioning given in the operators agreed Funded Decommissioning Programme. If, in the event, the Funded Decommissioning Programme is not completed to schedule, transfer of title to and liability for SF, and all financial and other responsibility for the SF, will be deferred and responsibility will remain with the operator until the Funded Decommissioning Programme has been completed.</p> <p>The Secretary of State will expect to retain the power for the Government to take title to and liability for SF before the end of the generating life of the station, if a disposal route became available during that period. The Secretary of State would expect to discuss with operators in individual cases to determine arrangements that would ensure that their Fund was adequate to fund payments at this time.</p>

ISSUE	ASSUMPTIONS
<p><b>Low Level Waste (LLW) management and disposal</b></p>	<p>LLW will be disposed of promptly after it has been generated in a suitable disposal facility. Disposal will be at the facility currently operating in West Cumbria or a successor facility.</p> <p>The costs of operational LLW disposal will be met from operational expenditure.</p> <p>The costs of disposing of decommissioning LLW will be met from the Fund. The Government will not set a fixed unit price for the disposal of LLW, as it will for the disposal of ILW and SF.</p> <p>LLW disposal facilities will be available to new nuclear power stations whenever required.</p> <p>Packaging waste into a form suitable for disposal will be the responsibility of the station operator. It is assumed that LLW will not be conditioned on site.</p> <p>Transport of LLW (and all associated ancillary costs including the costs of transport equipment) from its point of origin to the LLW disposal facility will be the responsibility of the station operator.</p> <p>Title to and liability for an LLW waste package will pass to the disposal facility operator at the point at which the waste package has been delivered to the LLW disposal facility and accepted by the disposal facility operator as fulfilling the appropriate waste acceptance criteria.</p>
<p><b>Non-radioactive hazardous waste management and disposal</b></p>	<p>The Base Case assumes that non-radioactive hazardous wastes arising as a result of operations and decommissioning will be managed according to regulatory requirements and current practices and will be disposed of promptly using established disposal routes.</p> <p>The costs of managing and disposing of non-radioactive hazardous waste from operations will be met from operational expenditure.</p> <p>The costs of managing and disposing of non-radioactive hazardous waste from decommissioning will be met from the Fund.</p> <p>The Government will not set a fixed unit price for the disposal of non-radioactive hazardous waste, as it will for the disposal of ILW and SF.</p>
<p><b>Waste conditioning</b></p>	<p>Waste will be conditioned in a manner and on a timescale which is consistent with current regulatory requirements.</p>

ISSUE	ASSUMPTIONS
<p><b>Treatment of wastes arising as a result of reactor refurbishment</b></p>	<p>This will be managed in the same way as operational wastes and paid for from operational expenditure.</p>
<p><b>Provision of interim stores for ILW and spent fuel (SF)</b></p>	<p>Operators will be obliged to provide safe and secure interim storage facilities that are technically capable of being maintained or replaced to last for at least 100 years from the time waste is first emplaced in them. If the operator’s plan states that the stores will need to be replaced in order to last for at least 100 years, then the operator will need to include in their contributions to the Fund provision to replace the stores.</p> <p>The costs of building (and possibly replacing) interim stores for ILW and spent fuel will be set aside and paid for from the Fund, insofar as they have not been built as part of the construction of the station.</p> <p>Operators will be obliged to provide the stores for use as they are needed, subject to agreement with the regulators and the Secretary of State.</p>

## 4.4 Classification of Costs arising under the Base Case

### Meeting the Costs of Waste Management, Disposal and Decommissioning

- 4.4.1** It will be important for operators (and others) to have clarity on which costs the Secretary of State would expect to be paid for from the Fund and which may be regarded as operational costs, which would not be paid for from the Fund, and would not be regulated under the Funding Arrangement Plan by the provisions of the Energy Bill (although the activities not paid for from the Fund would still be regulated by the Bill by virtue of their inclusion in the DWMP). Table 6 shows which waste management and decommissioning costs will be expected to be discharged from the Fund and which would be expected to be met from operational expenditure.
- 4.4.2** The Energy Bill requires that operators provide to the Secretary of State details of their plans for managing and disposing of all wastes, whether their financing is regulated by the Bill or not. Further, the Bill requires operators of new nuclear power stations to set aside sufficient funds to cover their full decommissioning costs and their full share of waste management costs and provide cost estimates in relation thereto. So far as the matters referred to in the “operational costs” column in Table 6 are concerned, for the reasons set out in paragraph 4.1.5 the Secretary of State does not consider it appropriate to impose a legal duty on operators of new nuclear power stations to provide cost estimates, nor details of the financial security put in place.
- 4.4.3** That said, the Secretary of State would expect operators to provide him with cost estimates for the management of wastes that will be met from operational expenditure (as set out below) for information. This will provide confidence that these costs have been given proper consideration by the operator along with all the other costs of managing and disposing of waste and decommissioning throughout the lifetime of the station.
- 4.4.4** Although we are not specifically consulting on this issue, respondents to this consultation are free to comment on whether there are other operational waste costs that ought to be met from the Fund. After Royal Assent of the Bill, the Secretary of State would expect to make an order setting out those operational waste costs (technical matters) that will be paid for from the Fund (i.e. making them designated technical matters).

**Table 6: Summary of principal cost streams and how they will be met**<sup>373839</sup>

Cost	How cost will be met	Included in fixed unit price?
Decommissioning the station	Independent Fund	No
Low Level Waste (LLW)		
<ul style="list-style-type: none"> <li>● Packaging and disposal of LLW from operations, including transport</li> </ul>	Operational Expenditure	N/A
<ul style="list-style-type: none"> <li>● Packaging and disposal of LLW from decommissioning, including transport</li> </ul>	Independent Fund	No
Intermediate Level Waste (ILW)		
<ul style="list-style-type: none"> <li>● Conditioning and packaging of operational ILW</li> </ul>	Operational Expenditure	N/A
<ul style="list-style-type: none"> <li>● Building and maintenance of interim stores for ILW<sup>38</sup></li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Conditioning and packaging of decommissioning ILW</li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Transport of operational and decommissioning ILW for disposal</li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Disposal of operational and decommissioning ILW</li> </ul>	Independent Fund	Yes
Spent Fuel (SF)		
<ul style="list-style-type: none"> <li>● Operation of fuel ponds during the generating life of station</li> </ul>	Operational Expenditure	N/A
<ul style="list-style-type: none"> <li>● Operation of fuel ponds after the generating life of station</li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Building and maintenance of interim stores for SF<sup>39</sup></li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Transport of SF for disposal</li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Encapsulation of SF for disposal</li> </ul>	Independent Fund	No
<ul style="list-style-type: none"> <li>● Disposal of all SF</li> </ul>	Independent Fund	Yes

38 If the interim stores are built as part of the station construction, the costs of their construction will not be met from the Fund.

39 If the interim stores are built as part of the station construction, the costs of their construction will not be met from the Fund.



Cost	How cost will be met	Included in fixed unit price?
<p>Non-radioactive hazardous waste</p> <ul style="list-style-type: none"> <li>● Managing and disposing of non-radioactive hazardous waste from operations</li> <li>● Managing and disposing of non-radioactive hazardous waste from decommissioning</li> </ul>	<p>Operational Expenditure</p> <p>Independent Fund</p>	<p>N/A</p> <p>No</p>
<p>Planning</p> <ul style="list-style-type: none"> <li>● Decommissioning planning before start of generation</li> <li>● Pre-closure decommissioning planning</li> <li>● Any planning carried out during decommissioning</li> </ul>	<p>Operational Expenditure</p> <p>Independent Fund</p> <p>Independent Fund</p>	<p>N/A</p> <p>No</p> <p>No</p>
<p>Other Costs</p> <ul style="list-style-type: none"> <li>● All other costs associated with operating the site until end of its generating life. These costs include, but are not necessarily limited to, those associated with maintaining the infrastructure necessary for the operator to be a holder of a nuclear site licence<sup>40</sup></li> <li>● All other costs associated with operating the site after end of its generating life and until the site licence is surrendered. These costs include, but are not necessarily limited to, those associated with maintaining the infrastructure necessary for the operator to be a holder of a nuclear site licence<sup>41</sup></li> </ul>	<p>Operational Expenditure</p> <p>Independent Fund</p>	<p>N/A</p> <p>No</p>

40 These costs are likely to include the costs of security for the site, site monitoring, ongoing maintenance at the site (other than maintenance of the interim stores for intermediate level waste and spent fuel) and liaison with the regulators.

41 These costs are likely to include the costs of security for the site, site monitoring, ongoing maintenance at the site (other than maintenance of the interim stores for intermediate level waste and spent fuel) and liaison with the regulators.

# 4.5 Methodology for Cost Calculations

## Background

- 4.5.1** To estimate the costs associated with decommissioning and waste management and disposal liabilities in order to comply with clause 41(7)(b) of the Energy Bill, operators will need to cost their DWMP.
- 4.5.2** The Government has established a Base Case, which defines a prudent lifecycle baseline against which potential operators can produce cost estimates. Further detail on the Base Case is set out earlier in this guidance.
- 4.5.3** The costs of waste management, disposal and decommissioning will be met by the operator from operational expenditure or from payments they will make into a Fund. Operators will be required to provide estimates to the Secretary of State for all the waste management, disposal and decommissioning costs they will meet from the Fund. The Government will also expect operators to assess the costs of waste management items that will not be paid from the Fund in a similarly prudent way and strongly encourages operators to include these costs in the DWMP they submit to the Secretary of State. Paragraphs 4.4.1 – 4.4.4 and Table 6 set out further information on which costs we expect will be met from operational expenditure and which from the Fund.

## The need to model costs

- 4.5.4** It is important for the Government to develop robust updated estimates of the costs of waste management, disposal and decommissioning and to this end we have developed a methodology to allow us to estimate these costs. Operators of new nuclear power stations will be expected to calculate their own cost estimates for waste management, disposal and decommissioning. Operators' own estimates will differ from those produced by the Government as they will be specific to the reactor design, site and other operational decisions of the operator, rather than generic. However, this methodology will provide operators with an example of how they might calculate their own cost estimates; as well as ensuring that the Government, the Nuclear Liabilities Financing Assurance Board (NLFAB) and those responsible for managing operators' Funds have a benchmark against which to assess the estimates produced by the operators.
- 4.5.5** The Nuclear Decommissioning Authority (NDA) is developing a parametric cost model which they will use to generate updated estimates of the costs of geological disposal. Cost estimates from both BERR's and the NDA's cost

models relating to the disposal of intermediate level waste and spent fuel will, together, enable the Government to set a prudent fixed unit price for operators for providing a disposal service for these wastes.

**4.5.6** The methodology that has been developed will allow estimates to be made of waste management, disposal and decommissioning costs, as well as allowing the associated uncertainties to be estimated, and the relative significance of these uncertainties to be assessed. The methodology allows the calculation of the total size of the liability, the spend profile associated with discharging the liability, and thus discounted costs. This document describes the methodology in outline.

**4.5.7** We are publishing the BERR cost modelling methodology here for consultation to seek views. We are not setting out updated cost estimates at this stage. The Roadmap in Table 2 sets out an indicative timeline to publishing cost estimates, although this does not form part of this consultation and is included for information only.

## Overview of methodology

**4.5.8** The total liability of operators for waste management, disposal and decommissioning can be regarded as falling into five broad areas:

- The management and disposal of spent fuel;
- The management and disposal of intermediate level waste;
- The management and disposal of low level waste;
- The management and disposal of non-radioactive hazardous waste; and
- Decommissioning costs – those costs associated with demolishing the power station and remediation of the site, excluding waste management costs.

**4.5.9** In their DWMP, operators must set down a plan for dealing with all areas of hazardous waste management, disposal and decommissioning for their power station, as identified in the Base Case.

**4.5.10** The methodology described here is designed to calculate estimates of the complete costs of waste management and decommissioning, although it also allows for the separation of those costs that will be met from operational revenues from those that will fall to the Fund.

## Spent fuel

**4.5.11** The costs associated with the management and disposal of spent fuel result from:

- The cost of storing spent fuel in cooling ponds and then in interim stores during the generating life of the station and after the station has ceased generating, until title to and liability for the fuel transfers to the Government;
- The construction and maintenance of interim stores to accommodate the spent fuel until it can be disposed of;
- The costs of transporting the spent fuel for disposal;
- The costs of encapsulating the spent fuel; and
- The fixed unit price payable to the Government in return for providing a waste disposal service.

**4.5.12** All of these costs are calculated on the basis of an inventory for this material and unit cost. The inventory of the store is calculated as follows. Fuel is unloaded from the reactor and transferred to a pond where it is held for a period to allow heat generated by the spent fuel to fall to levels acceptable for storage. This period will depend upon the type and rate of burn-up of the fuel. The cooled fuel is then transferred to interim storage. Given the rate at which fuel is discharged from the reactor, and the length of time the fuel is held in the cooling pond, the inventory of the fuel in the interim store can be calculated as a function of time.

**4.5.13** The costs associated with fuel storage in a given year can be calculated as the product of the store inventory and the cost of storage for each unit of fuel. This is expressed as the cost per unit of fuel per year. This unit cost includes an allowance for the cost of store construction, as it is assumed that the stores will be constructed as they are required, and for store operation and maintenance. The total storage cost can therefore be calculated as the sum of yearly storage costs up to the point where the spent fuel is disposed of.

**4.5.14** The overall cost of managing a single unit of spent fuel is calculated as the sum of the unit costs for storage, encapsulation, transportation to the disposal facility, and the fixed unit price payable to the Government for provision of a disposal service per unit of fuel. The total costs associated with these activities for the power station are then calculated as the product of the amount of spent fuel produced during the lifetime of the power station and the total unit cost for these activities.

**4.5.15** The costs of encapsulation and transport of spent fuel are assumed to be incurred immediately before title to and liability for the spent fuel transfers to the Government for disposal.

**4.5.16** The fixed unit price payable to the Government for the disposal of spent fuel is assumed to be incurred in accordance with the schedule agreed between the Government and the operator before the power station is constructed. The fixed unit price will be based on an estimate of the costs of disposing of operators' spent fuel in a geological disposal facility and will include the following items:

- The projected full costs of disposing of spent fuel in a geological disposal facility;

- Significant risk premium to cover:
  - the risk that the eventual costs of building a geological disposal facility to dispose of spent fuel are higher than estimated;
  - the risk that construction of geological disposal facilities is not complete at the agreed schedule for the Government to take title to and liability for an operator's spent fuel.

**4.5.17** The fixed unit price payable to the Government is expressed in terms of unit cost, multiplied by the amount of fuel for disposal.

## Intermediate level waste

**4.5.18** Total costs associated with the management and disposal of intermediate level waste are calculated using a methodology analogous to that used for spent fuel.

**4.5.19** The inventory of operational intermediate level waste in store at the end of generation is calculated from the generating lifetime of the reactor and the rate at which operational intermediate level waste is generated. After the end of generation, the inventory of this material in the store is calculated year-on-year, based on the inventory at the end of generation and the small annual generation of intermediate level waste from ongoing operational activities (for example, wastes arising from ongoing operations in the fuel ponds as the final tranches of fuel are cooled and transferred to the interim store).

**4.5.20** The inventory of decommissioning wastes in store is calculated year on year from estimates of the total volume of decommissioning intermediate level waste, the duration of decommissioning activities, and the timeframes for decommissioning activities in the decommissioning plan. Wastes are assumed to be conditioned promptly, and transferred to the store in the year in which they are generated.

**4.5.21** The costs associated with the storage of intermediate level waste in a given year can then be calculated from the inventory of operational and decommissioning wastes in store and the cost of storage for each unit of intermediate level waste, expressed as the cost per unit of intermediate level waste per year. This unit cost includes an allowance for the cost of store construction, as it is assumed that the stores will be constructed as they are required and for the operation and maintenance of the store. The total storage cost can therefore be calculated as the sum of yearly storage costs up to the point where the intermediate level waste is disposed of.

**4.5.22** The costs for conditioning intermediate level waste are calculated year-on-year, based on calculated waste volumes to be conditioned in a given year and the cost of waste conditioning for each unit of waste.

**4.5.23** The fixed unit price payable to the Government for the disposal of intermediate level waste is assumed to be incurred in accordance with the schedule agreed between the Government and the operator before the power station is constructed. The fixed unit price will be based on an estimate of the costs of disposing of operators' intermediate level waste in a geological disposal facility and will include the following items:

- The projected full costs of disposing of intermediate level waste in a geological disposal facility;
- Significant risk premium to cover:
  - the risk that the eventual costs of building a geological disposal facility to dispose of intermediate level waste are higher than estimated;
  - the risk that construction of geological disposal facilities is not complete at the agreed schedule for the Government to take title to and liability for an operator's intermediate level waste.

**4.5.24** The fixed unit price payable to the Government is expressed in terms of the cost per unit of intermediate level waste, multiplied by the amount of this waste for disposal.

## Low level waste

**4.5.25** Low level waste is assumed to be disposed of as soon as feasible after it is generated, without the need for significant interim storage. The cost elements associated with the management of low level waste are therefore:

- Packaging;
- Transport to a suitable disposal facility;
- Disposal in a suitable disposal facility.

**4.5.26** Operators will be required to ensure that any facilities needed for packaging are available on site. It is assumed that low-level waste will not be conditioned on site and that conditioning facilities will therefore not be needed.

**4.5.27** Low level waste arises through operations and from decommissioning activities. The annual quantity of low level waste arising from operations is based on information on raw waste arisings provided by the reactor designers<sup>42</sup>, coupled with an assessment of the changes in waste volumes brought about by the management routes envisaged.

**4.5.28** The annual quantity of low level waste arising from decommissioning is calculated year on year from estimates of the total volume of decommissioning

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<sup>42</sup> This information has to date been provided by the designers of those reactors currently being assessed through the Generic Design Assessment (GDA) process. Further information on the GDA process and the reactors being assessed can be found at <http://www.hse.gov.uk/newreactors/index.htm>

low level waste, the duration of decommissioning activities, and the timeframes for decommissioning activities in the decommissioning plan.

- 4.5.29** The cost for low level waste management in any year is calculated from the annual arisings of low level waste and the unit costs for packaging, transport and disposal.

## Non-radioactive hazardous waste

- 4.5.30** Non-radioactive hazardous waste is assumed to be packaged and transferred to a suitable commercial contractor for disposal promptly after it has been generated. Payment for this service is made at the point at which waste is transferred to the contractor. This arrangement is directly analogous to that described above for low level waste and, as such, the costs of the disposal of non-radioactive hazardous waste are calculated in the same way as the costs for low level waste.

## Decommissioning and site remediation

- 4.5.31** The costs of decommissioning and site remediation are calculated from engineering estimates, and are imported directly into the overall cost calculation. These costs are phased in accordance with the timescales set out in the timeline on the phases of the Base Case, set out in Chart 2.

## The estimation of uncertainty in overall cost estimates

- 4.5.32** The methodology so far described allows calculation of a central estimate for decommissioning, waste management and disposal costs. In order to evaluate an inflation, risk and uncertainty adjusted estimate of these costs, which is conservative and ensures that risk to the taxpayer is remote, it is necessary to estimate a distribution of costs which represents, as far as possible, the uncertainties in the cost estimates.

- 4.5.33** The methodology used to estimate the possible range for the costs identifies key parameters for the cost calculation, which could include waste volumes, costs or dates. Technical expertise and judgement is then used to estimate possible ranges for these parameters and to assign simple distributions to them. The distribution in the size of the liabilities is then calculated from the data by Monte Carlo methods.

- 4.5.34** In this technique, the model is run many times using different values for the input parameters. The values for each parameter are chosen so that, after repeated runs, the set of values chosen for each input parameter reflects the distribution assigned to it. The distribution of results provides a picture of the distribution of the overall liability.

**4.5.35** Using this information it is possible to determine a cost estimate which will cover the costs of decommissioning and waste management and disposal with a high degree of certainty.

## Using the cost estimates to set a fixed unit price for waste disposal

**4.5.36** Paragraphs 2.9 – 2.13 set out that the Government will set a fixed unit price to operators for disposal of their intermediate level waste and spent fuel, and will include in the fixed unit price a significant risk premium.

**4.5.37** As set out above, the Government intends to use BERR's and the NDA's cost modelling work to determine the appropriate level for the fixed unit price. The Government will take a conservative view of the cost estimates for disposal of intermediate level waste and spent fuel and will use the distribution of costs generated by the Monte Carlo analysis to assess the risks associated with the estimates. This work will enable the Government to determine the risk premium that should be added to the conservative estimates of costs to reach the fixed unit price they wish to set for operators. We will use a similar methodology to inform the process by which the Government will determine the appropriate amount that should be included in the risk premium to cover the risk that construction of disposal facilities is not complete by the agreed schedule for the Government to take title to and liability for an operator's waste and spent fuel.

**4.5.38** The fixed unit price set for operators will be determined in each case by reference to the estimates of costs and the level of certainty we have in those costs. Over time, we will develop a greater understanding of the actual costs of disposing of intermediate level waste and spent fuel. This greater certainty about the underlying costs may enable the Government to reduce the level of risk premium they will require. However, in the early stages, we expect the risk premium we require to be significant to reflect our level of certainty in the cost estimates.

**4.5.39** The Roadmap in paragraphs 2.25 – 2.32 and Table 2 sets out an indicative timetable for publishing the detailed methodology for establishing the fixed unit price for intermediate level waste and spent fuel disposal.





# Section 5: Funding Arrangements Plan Guidance

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# 5.1 Content of the Funding Arrangement Plan

**5.1.1** This document contains guidance for operators of new nuclear power stations to assist them in drawing up a Funding Arrangement Plan (FAP). The Funding Arrangement Plan is that part of the Funded Decommissioning Programme which addresses those matters referred to in clause 41(7)(c) of the Energy Bill (namely the security to be provided in connection with the estimates of costs of the designated technical matters). Together with separate Decommissioning and Waste Management Plan (DWMP) guidance in Section 4 of this document, this guidance provides information on what an approvable Funded Decommissioning Programme should contain.

**5.1.2** The Funding Arrangement Plan should set out the operator's detailed plans for one or more Funds to deliver sufficient moneys to meet its decommissioning, waste management and waste disposal liabilities identified in the operator's DWMP, including proposals to ensure that risks are adequately managed such that the Fund is sufficient to meet these liabilities as they fall due.

**5.1.3** The Funding Arrangements Plan section of the Funded Decommissioning Programme must cover all decommissioning, waste management and waste disposal costs which are incurred after the end of generation plus any waste costs that arise during generation as specified in an order made under clause 41 (6) of the Energy Bill. Ongoing waste management costs during the generating lifetime of the station must be met by the operator from its operating expenditure and would not therefore be expected to be met from the Fund (see Table 6).

**5.1.4** It is for each operator to set out in its Funding Arrangement Plan the precise details for establishing, contributing to, maintaining and administering the Fund and disbursements from it together with all or any other forms of additional security to address risks such as the insufficiency of the Fund. The Funding Arrangement Plan should follow the model framework set out below as far as it is practicable to do so:

1. Background Information
2. Description of Fund Structure
3. Explanation of Fund Governance
4. Target value for Fund and contribution schedule to Fund
5. Review Process

6. Fund Investment Policy
7. Payment and Disbursement Policy
8. Winding up the Fund
9. Financial security against early decommissioning risk and Fund insufficiency
10. Proposals for remedial action to make good any shortfall in the Fund during station generating life
11. Change in ownership or control of the operator or site

**5.1.5** Each Funding Arrangement Plan must be supported by detailed analyses, reports and documentation in respect of the structure, governance and operational arrangements of the Fund such as the Secretary of State may request.

**5.1.6** The remainder of this guidance provides further information to assist operators in preparing and submitting their Funding Arrangement Plan for approval.

**5.1.7** The Funding Arrangement Plan Guidance uses a number of defined terms. A Glossary of these terms is set out at the end of this guidance (see paragraph 5.14.1). Please refer to the glossary for the definition or explanation of terms used in this guidance.

## 5.2 Objective and Guiding Principles

**5.2.1** This section, 5.2, sets out the Objective that the Secretary of State will expect the arrangements under the Funding Arrangement Plan to achieve and the Guiding Principles which he will apply when considering whether to approve those arrangements or to modify them. The Secretary of State's overriding concern is to ensure that operators, and not Government, meet the full costs of decommissioning and their full share of waste management costs.

### Objective

**5.2.2** As set out in the Nuclear White Paper<sup>43</sup>, the Secretary of State will require the funding arrangements under the operator's Funded Decommissioning Programme to be robust and ensure that sufficient funds are set aside during the electricity generating life time of the new nuclear power station, to ensure that operators are able to meet in full as and when necessary:

- the full costs of decommissioning their installations;
- their full share of the costs of safely and securely managing and disposing of their waste.

It is the operator's duty to ensure that this objective is met.

**5.2.3** To achieve the Objective in paragraph 5.2.2, (also set out in paragraphs 3.49 and 3.55 of the Nuclear White Paper), the Secretary of State will expect that prior to the start of commissioning a new nuclear power station, the operator will create an independent Fund to accumulate, invest and manage payments received to meet the above costs. These payments must be accumulated, invested and disbursed as set out in the Funded Decommissioning Programme and approved by the Secretary of State by reference to the Guiding Principles set out below. It is the duty of the Fund to invest, manage and accumulate moneys received for this purpose to enable the Objective to be met and to verify that it is being met or will be met from time to time during the life of the Fund and by formulating certain key components of the programme at the time it is first submitted for approval.

**5.2.4** The Energy Bill precludes the Secretary of State from approving a Funded Decommissioning Programme which in his view does not make prudent provision for the full costs of decommissioning the relevant power station and the full share of related waste management costs. The Secretary of State

would not expect to approve arrangements which did not at the minimum make provision for accumulation of sufficient moneys by means of payments into an independent Fund.

**5.2.5** The Government recognises that there may be situations where the Fund is insufficient to meet the operator's liabilities in full. For example, the liabilities may crystallise earlier than expected or crystallise when expected but where the Fund is inadequate to meet the costs (e.g. because of a re-assessment in the cost of the liabilities which has not led to increased contributions contrary to paragraph 5.5.10). This issue is dealt with in more detail below in paragraph 5.2.6. The additional arrangements put in place by an operator to deal with such risks will be considered for approval by reference to the Guiding Principles set out below and references to the Fund below should not be construed as excluding the application of those principles to such additional arrangements.

### *Approval criteria: Guiding Principles*

**5.2.6** Operators' proposals will be considered on a case by case basis. When considering whether to approve, to approve with conditions or whether to modify a Funding Arrangement Plan which has already been approved, the Secretary of State will have regard to the following Guiding Principles:

- **Independence of Fund**

The operator must ensure that the arrangements relating to the accumulation, management and disbursement of moneys necessary to discharge its liabilities are independent of the operator and of the Government, subject to the ongoing monitoring set out in the Energy Bill and in this Guidance.

Independence means the absence of the ability to control any aspect of the structure, governance or operation of the Fund once it has been established.

- **Sufficiency of Fund**

The operator must ensure that the Fund is structured, governed and operated (including as regards the timing around contributions and the investment policy) to deliver sufficient moneys to discharge in full the operator's liabilities as and when they fall due.

In particular, an operator must set out in its Funding Arrangement Plan the mechanism and instruments it will have in place to ensure that sufficient moneys are available to pay for the operator's liabilities if the Fund is insufficient (for whatever reason) to enable those liabilities to be met in full on their due date.

The Secretary of State would expect such mechanisms to be put in place to cover situations where the Fund is under-funded at the date the station

reaches the end of its generating life time or proves inadequate to meet the operator's liabilities during decommissioning. Such situations might include, for example where:

- o the power station has to be closed and decommissioned early for technical reasons; or
- o the operator becomes insolvent before the station has reached the end of its generating life time and no buyer can be found for the station who is willing to meet the operator's remaining liabilities; or
- o insufficient contributions have been made to meet re-assessed decommissioning liabilities, where this re-assessment has caused an increase in the amount of the liability through, for example, timing or cost assumption changes; or
- o insufficient contributions have been made as a consequence of lower than anticipated investment returns being achieved.

● **Restrictions on use of Fund assets**

The operator must ensure that the structure and governance of the Fund is such that neither it nor anyone else may use moneys in the Fund for any purpose other than decommissioning, waste management and waste disposal in relation to the station to which the moneys relate even in the event of the reorganisation, for example, of the operator, except in the event of any surplus once decommissioning has been completed and the fixed price for waste disposal has been paid (see paragraphs 5.9.1 – 5.9.5).

● **Insolvency remoteness**

The operator must ensure that the Fund is structured so that the risk of a successful challenge to the Fund in the event of the operator's insolvency or the insolvency of a body corporate which is associated with the operator is minimised.

● **Preventing recourse to public funds**

The operator must ensure that the prospect of the operator's liabilities having to be met in whole or in part from public funds is remote at all times.

● **Transparency**

The operator must ensure that the arrangements under the Funding Arrangement Plan are such that the process of accumulating, maintaining and managing funds sufficient to discharge the operator's liabilities (distinguishing for this purpose decommissioning and waste management liabilities, and waste disposal costs) is transparent and visible to the Secretary of State, stakeholders and the wider public.

In particular there must be transparency between, and separation and separate reporting of the two sets of liabilities which arise in relation to decommissioning and waste management on the one hand and waste

disposal on the other as well as the moneys accumulated to meet the costs of each. There should be no element or prospect of cross-subsidy between the two.

In order to achieve the necessary transparency as between these two categories of liabilities and the moneys accumulated to meet them, an operator may decide to create two or more funds rather than one. References in this Guidance to a "Fund" in the singular should not be read as precluding this possibility and any such proposal would be considered by the Secretary of State on its merits.

## *General*

- 5.2.7** This guidance sets out the principles that an operator should adopt in establishing a Fund. It is not intended to be unduly prescriptive as to the legal structure and administrative arrangements for the Fund, nor to set out the relative advantages and disadvantages of possible vehicles which may be capable of discharging the various functions of the Fund thereby achieving the Objective and satisfying the Guiding Principles.
- 5.2.8** The remainder of this guidance focuses on specific aspects of the Funding Arrangement Plan. The Secretary of State will need to be provided with the necessary information to satisfy himself that prudent financial provision had been made for the operator's liabilities. That said, the Secretary of State is not aware of an alternative funding structure to that set out in paragraph 5.2.3 above which would meet the Objective and the Guiding Principles to the same extent.



## 5.3 Fund Structure

- 5.3.1** In order to gain approval for its Funded Decommissioning Programme the operator will be expected to propose a structure for an accumulating Fund which meets the costs of decommissioning and waste management and its full share of waste disposal costs, which best enables it to meet the Objective set out in paragraph 5.2.2 and which complies with the Guiding Principles.
- 5.3.2** Any structure proposed must be demonstrably capable of accumulating sufficient funds to meet the operator's liabilities as and when they fall due. It must deliver at all times independence from the operator, transparency and robustness from claims by the operator (for purposes other than in connection with the Objective) or by the operator's creditors in the event of the operator's insolvency or the insolvency of a body corporate which is associated with the operator.
- 5.3.3** As set out in guidance on preparing a Decommissioning and Waste Management Plan, the operator will be required to establish robust estimates for its decommissioning and waste management liabilities. The Government will set a fixed unit price for the disposal of higher activity wastes. Operators may decide to create a single Fund, or establish separate Funds for (a) the operator's decommissioning and (b) the operator's waste disposal costs.
- 5.3.4** Each operator may set up a single Fund for each new nuclear power station it operates or for a fleet of new nuclear power stations. Alternatively, a number of operators may set up individual Funds within an umbrella Fund. In all cases, there must be no element or prospect of one Fund being used to meet liabilities which are properly the responsibility of another Fund. In any event, there must be transparency, separation and separate reporting of the two sets of liabilities (decommissioning and waste management on the one hand and waste disposal on the other) and the moneys available to meet the costs of each for each station. Any such arrangements would also have to meet the Objective and the Guiding Principles.

**5.3.5** The Secretary of State believes that the Objective can be achieved and the Guiding Principles satisfied by a structure with the attributes set out below:

**(A) A Fund established in the UK**

- Establishing the Fund in the UK (that is to say ensuring it is domiciled and managed from the UK, which for this purpose does not include Scotland<sup>44</sup>) would assist in meeting the principle in relation to insolvency remoteness. Establishing the Fund elsewhere would increase this risk by making the Fund vulnerable to changes in local insolvency law as well as depriving it of the protection which the Energy Bill seeks to confer on it in the event of the insolvency of the operator. Further, since certain forms of Fund structure (such as trusts) are not widely recognised in civil law jurisdictions, there are also risks that these kinds of structures could be re-characterised and therefore not be sufficiently insolvency remote.

**(B) The Fund**

- The Fund could take a number of forms including a special purpose vehicle (such as a private company limited by shares or guarantee). In order for that vehicle to be considered orphaned and sufficiently remote from the operator, its creditors and the Government, the shares or membership of that special purpose vehicle could, for example, ultimately be held by a UK trust whose trustees are within the jurisdiction of the Energy Bill.
- The arrangements under which the Fund is established should set out measures to ensure its longevity and continuance of the purpose for which it was established including appropriate checks and balances as regards the succession of directors, members and trustees within the Fund structure.

**(C) Activities of the Fund**

- Whilst the operator is ultimately responsible for discharging its own liabilities, the Fund should be established with the primary objective of accumulating sufficient funds to meet these liabilities (and with sufficient powers to achieve this end).
- The Secretary of State would expect operators to demonstrate in the Funding Arrangements Plan that transfers to the Fund could not reasonably be expected to be challenged as transactions at an undervalue or preferences (or their equivalent in any other applicable jurisdiction).
- The Secretary of State would also expect to see the Fund's activities ring-fenced from the operator and its creditors and thereby insulated from liabilities and obligations owed to third parties by the operator. Constitutional or management restrictions applicable to the Fund will be expected to include requirements to:

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<sup>44</sup> The body responsible for investing, accumulating and managing moneys must be formed and domiciled within England, Wales and Northern Ireland, but see 5.3.5(B) in relation to the domicile of a trust where this forms part of the structure of the Fund.

- have a limited purpose and activities;
- control change to the permitted purpose and activities;
- have a majority of directors or other persons in positions of authority who are independent of the operator such that the operator does not have either direct or indirect control of, or influence over, the Fund;
- maintain its own legal identity, independent of the operator, including with respect to maintenance of its own separate books, records, financial statements and accounts;
- not guarantee or otherwise be obliged for the debts of others;
- not pledge its credit for the benefit of others;
- prohibit or restrict the Fund from borrowing moneys or issuing securities;
- not pledge (or provide security in respect of) its assets other than to the Government or make loans or advances;
- not have any employees; and
- ensure any relationship with others is on bona fide, arm's length terms.

#### **(D) Ownership of the Fund**

The Fund should be independent of the operator and the operator's group. It should be insolvency remote and any entity within the overall structure (including any with ownership/membership interests in the Fund) should itself also be established as insolvency remote.

#### **(E) Disbursement from the Fund**

- The expectation is that disbursements will be made from the Fund up to the value of the assets of the Fund to meet relevant decommissioning and waste disposal expenditure costs (see paragraphs 5.8.1 – 5.8.9).
- Given the purpose of the Fund is to accumulate and manage moneys for decommissioning and waste management the Fund should not be capable of making distributions, other than to fulfil this objective, until those liabilities have been discharged in full.
- Any surplus in the Fund remaining once decommissioning and waste management activities are complete and fully paid for will require to be disbursed in accordance with the objects or purposes of the Fund. The destination of those moneys will need to be established in the Funding Arrangement Plan (see paragraphs 5.9.1 – 5.9.5).

### *Fund powers*

**5.3.6** The Funding Arrangement Plan should set out the powers and duties of the Fund (and of those responsible for running it where this distinction arises) as well as the powers and duties of the operator which are relevant to

the purpose of the Funding Arrangement Plan. For example, the Funding Arrangement Plan should set out the powers and duties of the relevant parties in relation to:

- setting the rate of (financial) contributions to be made by the operator to the Fund;
- investing, accumulating and managing Fund moneys;
- reporting to the operator and to the Secretary of State on the performance of the Fund (see paragraphs 5.6.1 – 5.6.16); and
- disbursement of moneys (see paragraph 5.8.1 – 5.8.9).

**5.3.7** The proposed Fund structure should enable the obligations and restrictions on it as well as its powers and duties in relation to the operator to be set out in its constitutional documentation, in a manner such that these aspects cannot be revised, except with the approval of the Secretary of State through the submission of a revised Funding Arrangement Plan.

**5.3.8** The Funded Decommissioning Programme will be legally binding on the operator in that failure by the operator to comply with it will be a criminal offence. However, elements of the Funded Decommissioning Programme may be reinforced through contractual agreements between interested parties, for example in relation to waste disposal.

## 5.4 Fund Governance

- 5.4.1** The Secretary of State will wish to be satisfied that suitable arrangements are in place for the governance of the Fund. This includes not only such arrangements for the Fund itself (i.e. the body responsible for investing, accumulating and managing moneys received) but also for any entity (such as a trust) with ownership/membership interests in, or control of, the Fund.
- 5.4.2** The Secretary of State would expect to see the following elements included in the constitutional arrangements or structure of the Fund as regards those responsible for the management of the Fund:
- a clear delineation of duties;
  - appropriate restrictions on powers; and
  - provisions to ensure that they act with the appropriate level of skill and care in the performance of their functions.
- 5.4.3** The governance arrangements will depend on the fund structure adopted. Governance of the Fund should, however, be by those who are competent to govern, the majority of whom must be independent of the operator. Governance of the Fund is also to be independent of the Government. The Secretary of State would therefore not expect to have any role in the appointment process of those responsible for Fund governance beyond being satisfied that both the appointment criteria and the continuing obligations of those responsible for Fund governance (which operators should include in the Funding Arrangement Plan) deliver the expected level of independence and competence.
- 5.4.4** The operator must not have either direct or indirect control of, or influence over, the Fund. The Secretary of State is therefore unlikely to be satisfied by funding arrangements which leave control of the Fund in the hands of the operator or a majority of persons who are not independent of the operator. If the operator appoints non-independent persons to a governance role, then they must be in a minority and their responsibilities must be owed to the Fund regardless of any other position that they may hold.
- 5.4.5** Independence can be demonstrated in a number of ways. In all cases, those persons appointed to a governance role (with the exception of those appointed in a non-independent role in accordance with paragraph 5.4.4) would be expected to affirm their independence before accepting that appointment, and should be subject to a requirement to maintain their independence for the duration of the appointment. This will include requiring those persons to avoid any situation in which that person has, or could have, a direct or indirect interest that conflicts, or possibly may conflict, with his duties to the Fund in a manner consistent with the duties applicable to directors of any English

company. In the case of individuals, the Secretary of State would expect the individual to be independent of the operator according to principles at least as stringent as those set out in Principle A.3.1 of the Combined Code on Corporate Governance<sup>45</sup>. Without prejudice to the foregoing, neither an individual (together with his close relatives and family trusts) nor a corporate body (together with its associates) should hold (directly or indirectly) any investment in the operator or any of its associated companies which gives rise, or could be perceived to give rise, to an actual or potential conflict of interest.

**5.4.6** Competence can also be demonstrated in a number of ways. In the case of individuals, the individual should be a demonstrably fit and proper person with the necessary education, experience and skills to hold the position. In the case of the appointment of a corporate body to govern the Fund, the Secretary of State would expect that the operator could demonstrate that the corporate body has the requisite level of experience and resources (including individuals who could demonstrate the same qualities described above) to manage the role.

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<sup>45</sup> Combined Code on Corporate Governance, July 2003.

# 5.5 Target value for the Fund and contributions to the Fund

## Target value for the Fund

- 5.5.1** The operator will be responsible for making good any shortfall or risk of shortfall in the accumulated moneys held by the Fund.
- 5.5.2** For decommissioning liabilities, to minimise the risk that the funds accumulated are insufficient, the Fund will be expected, based on robust assumptions, to accumulate at least 100 per cent of the inflation, risk and uncertainty adjusted value of the operator's predicted decommissioning liabilities. The Secretary of State will expect an assessment of an appropriate risk based contingency to be included in the target Fund value which the Fund would be expected to reassess regularly. Including such a contingency in the target amount for the Fund will mitigate against increases in the costs of the operator's liabilities set out in the Decommissioning and Waste Management Plan and/or instances where the Fund does not achieve the anticipated growth on its investments.
- 5.5.3** The target amount for the Fund to meet the costs of waste disposal will be based on the fixed unit price set by the Government and the agreed schedule according to which payments to the Government must be made. Similarly, the Secretary of State would expect a contingency to be included in the target value of the Fund accruing to meet the fixed unit price for waste disposal, to mitigate against Fund investment returns being less than anticipated.
- 5.5.4** The Secretary of State would expect the first payment to be made to the Fund from the outset of generation of electricity.
- 5.5.5** The Funding Arrangement Plan should set out the operator's proposals to ensure that in reasonable time before the date on which the station is expected to cease electricity generation, there are moneys in the Fund which, having regard to the expected investment performance of the Fund, will be sufficient to meet the operator's liabilities as and when they fall due.

## Contributions to the Fund

- 5.5.6** Payments to the Fund should be viewed as an essential element of operation which must be serviced before debt.
- 5.5.7** To satisfy the Secretary of State that the operator will be capable of meeting the Objective, the Funding Arrangement Plan should set out the level of and schedule for contributions which the operator will make to the Fund and the basis on which modifications to the contribution schedule will be determined through the generating life time of the station. The Secretary of State would expect the Fund (rather than the operator) to set the contribution schedule within the approved investment policy drawn up by the operator.
- 5.5.8** Operators will need to explain that their contributions to the Fund are made in consideration of potential tax liabilities that will be levied on the operator and the Fund. In considering the tax treatment, it is recommended that operators consider the VAT treatment of payments both into and out of the Fund as well as the VAT treatment of decommissioning costs and whether output VAT is recoverable. From a corporate tax perspective, operators should consider the corporate or income tax treatment of the receipts, payments and investment income of the Fund and operator.
- 5.5.9** It will also be necessary for operators to explain the rationale for the proposed Fund investment policy and hence the assumptions that have been made about returns on investments made by the Fund (see paragraphs 5.7.1 – 5.7.6).
- 5.5.10** The obligation to contribute to the Fund must be legally binding on the operator and enforceable by those with responsibility for discharging the function of the Fund. The Funding Arrangement Plan must set out the remedial steps to be taken if the Fund becomes, or is at risk of becoming, under-funded at any stage. The Funding Arrangement Plan must also set out the powers that the Fund would have in these circumstances and the additional duties that would arise on the operator (see paragraphs 5.11.1 – 5.11.4).
- 5.5.11** In the Funding Arrangement Plan, the operator should make proposals for the limited circumstances in which contributions to the Fund may be revised downwards. These circumstances may include where the Fund's growth has out performed expectations and the actuarially assessed value of the Fund is significantly greater than its target value at that point in time and the persons responsible for managing the Fund consider that a reduction in the contribution rate would not be imprudent. It is not expected that the Secretary of State would agree to a revision downwards of contributions to the Fund (which is likely to amount to a modification which would require his approval under clause 46 of the Energy Bill) under any circumstances in the first ten or last five years of a new nuclear power station's generating life.



**5.5.12** Once all the operator's liabilities relating to decommissioning and waste management and waste disposal have been fully discharged, any surplus moneys held by the Fund must be disbursed in accordance with the objects or purposes of the Fund which may mean they are returned to the operator (see paragraphs 5.9.1 – 5.9.5).

**5.5.13** The Secretary of State anticipates the preparation, revision and approval of Funding Arrangement Plans may be a multi-stage process in which operators will have to satisfy him<sup>46</sup> on a number of constituent parts of a Funded Decommissioning Programme consecutively. It will be clear from what is set out above that the investment policy (for example) referred to in paragraphs 5.7.1 – 5.7.6, would need to be drawn up by the operator before the contribution schedule could be formulated. Equally, the Secretary of State would expect the operator to be able to demonstrate to his satisfaction that the persons responsible for managing the Fund were content with the arrangements set out in the Funding Arrangement Plan by the operator prior to his deciding whether to approve it or not. He would therefore expect these persons to be identified or appointed before proposals on the investment strategy and contribution schedule are made. The Secretary of State will expect operators to make proposals as to how far in advance of the commencement of electricity generation those persons responsible for managing the Fund will need to be appointed or identified. Clearly any changes to the programme in the light of comments from these appointees will need to be approved by the Secretary of State.

## Contribution Disputes

**5.5.14** The Secretary of State considers it important that the relationship between the operator and the Fund recognises that it is the Fund that should have the right to set the contribution schedule based upon the investment policies put forward by the operator approved in the Funding Arrangement Plan. Notwithstanding this, the Secretary of State recognises the possibility of disputes arising between the operator and the Fund on other matters, particularly given the nature of the liabilities and costs involved and the length of time before those liabilities are expected to crystallise.

**5.5.15** The Funding Arrangement Plan should therefore include a fully scoped dispute resolution procedure to facilitate the timely and cost-effective resolution of disputes between persons with obligations under the Funded Decommissioning Programme in respect of those matters.

**5.5.16** Whatever form (or forms) of dispute resolution are chosen the Funded Decommissioning Programme should make clear whether the procedure and outcome is binding; the scope of the procedure (i.e. the disputes to which it relates if it does not relate to all disputes); and the time scales within which the relevant steps have to be taken by the parties.

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<sup>46</sup> The Secretary of State will call on the advice of the Nuclear Liabilities Financing Assurance Board (NLFAB) in assessing the constituent parts of a Funded Decommissioning Programme.

## 5.6 Review and reporting

**5.6.1** The operator will be expected to calculate its own estimates of the costs of meeting its decommissioning liabilities. The persons responsible for managing the Fund will be expected to satisfy themselves as to:

- the accuracy of the operator's estimates of the costs of meeting its decommissioning liabilities; and
- the contributions and investment returns necessary to accumulate a Fund sufficient to satisfy both the decommissioning liabilities and the waste disposal liabilities as and when they arise.

### Records

**5.6.2** The operator must demonstrate to the Secretary of State that, as part of its basic record keeping structure, it will maintain an accurate record of the design of, at least, the nuclear island(s) and such record should be continuously updated to reflect technical and operational changes to, at least, the nuclear island(s). The persons responsible for managing the Fund must be satisfied with these arrangements.

**5.6.3** This system should draw on "configuration control" models from, for example, process industries and the aeronautical sectors, and will supplement existing record keeping practices under current requirements. The objective of "configuration control" is to manage the evolution of the approved design of, at least, the nuclear island(s) through a systemic change management process and the implementation of operational and technical changes to ensure accuracy and consistency between the records and, at least, the nuclear island(s).

**5.6.4** Such a system will assist an operator in ensuring it has in place comprehensive, transparent and effective arrangements for assessing how proposed operational and technical changes to, at least, the nuclear island(s) will impact the Funded Decommissioning Programme before the operational and technical changes are made.

**5.6.5** The operator will also be required to keep and make available a detailed schedule of the anticipated and actual waste arisings.

## Annual Report and Quinquennial Report

- 5.6.6** The operator will be expected to carry out both annual and quinquennial reviews of the Funded Decommissioning Programme reports of which should be submitted to the Secretary of State and published. The reviews should be carried out with the aim of ensuring that the Objective may be achieved, namely that the Decommissioning and Waste Management Plan, including cost estimates, remains accurate and up to date and reflects the current state of the plant to which it relates; and that the funding arrangements remain capable of yielding sufficient funds to meet the decommissioning liabilities and waste disposal liabilities as and when those funds are needed.
- 5.6.7** Set out in Annex A are details of what the Secretary of State would consider to be an appropriate and practicable means for the relevant persons to satisfy themselves that the Objective was met (at all material times) through an annual and quinquennial reporting structure. The Secretary of State would assess the operator's proposals for an annual and quinquennial reporting structure on a case on by case basis with reference to the Guiding Principles and in the light of the procedure set out in Annex A.
- 5.6.8** In any event, the persons responsible for managing the Fund will be expected to take advice from suitably qualified experts operating under appropriate levels of professional indemnity cover in reviewing the operator's annual and quinquennial report and in relation to the review of the Fund.
- 5.6.9** The NLFAB will provide on-going advice to the Secretary of State in connection with all funding arrangements and may be called upon to review some or all of the information provided to the Secretary of State by the operator and the persons responsible for managing the Fund.
- 5.6.10** The Secretary of State would also expect the annual and quinquennial reports to be published. Operators should set out in their Funding Arrangement Plan their proposals regarding publication. The Government will have regard to justifiable sensitivities in relation to confidentiality and the extent of material to be placed in the public domain when considering operators' proposals regarding publishing reports.
- 5.6.11** During the decommissioning phase, the operator and the persons responsible for managing the Fund will be expected to provide annual reports as outlined in paragraph 5.8.5 below.

## Approval of material changes

- 5.6.12** All modifications to an approved Funded Decommissioning Programme (other than those to which regulations made under clause 46 of the Energy Bill apply) require approval by the Secretary of State. If, at any time, an event occurs which requires a change to be made to the Funded Decommissioning Programme, subject to any materiality threshold to be set out in regulations,

the Secretary of State will expect the operator and/or those persons responsible for managing the Fund to promptly notify him of that event, provide details of the effect on the operator's liabilities of such an event and the financial consequences of such a change on the Funded Decommissioning Programme, and, propose for approval by the Secretary of State a modification to the Funded Decommissioning Programme to take account of that event in accordance with the procedure laid down in clauses 44 and 45 of the Energy Bill (see paragraphs 3.22 – 3.33).

**5.6.13** On the annual review, where the cumulative effect of operational or technical or any other changes on the cost estimates of decommissioning liabilities or the amount of the waste disposal liabilities in the previous year is above a materiality threshold which we would expect to be set out in regulations, then the Secretary of State would expect the operator and the persons responsible for managing the Fund to propose for approval by the Secretary of State any modification to the Funded Decommissioning Programme necessary to update the programme to take into account these changes.

## Information

**5.6.14** In addition to the information which he expects to receive as set out above, under clause 49 of the Energy Bill the Secretary of State has the power to obtain information from the operator, the persons responsible for managing the Fund or other persons with obligations under the Funded Decommissioning Programme (for example, bodies corporate associated with the operator which have obligations under the programme). Under clause 49(3) of the Bill the Secretary of State may only obtain information for the purpose of enabling him to determine:

- whether the Funded Decommissioning Programme is being complied with;
- whether it will be possible for obligations under the Funded Decommissioning Programme arising at a future date to be complied with;
- whether the Funded Decommissioning Programme makes prudent provision in relation to the matters set out in the DWMP and the Funding Arrangement Plan.

**5.6.15** The Secretary of State would also expect the persons responsible for managing the Fund to have appropriate rights to request and receive information from the operator.

## Notification

**5.6.16** In addition to the notification requirement set out in paragraph 5.6.12, the Secretary of State would expect the Funding Arrangement Plan to provide appropriate procedures to ensure that the operator and the persons responsible for managing the Fund report to the Secretary of State immediately

on or prior to the occurrence of any of the following events (whether or not they result in a breach of the programme):

- Change of control or ownership of the operator (see paragraphs 5.12.1 – 5.12.9);
- Change to the contribution schedule;
- Change in the credit rating of an operator, or any entity providing a guarantee or other credit support under the Funded Decommissioning Programme (see paragraphs 5.10.1 – 5.10.7);
- Unplanned closure of the plant;
- Change in the investment proposal or a change of strategy.

## 5.7 Investment policy

**5.7.1** The Secretary of State would expect the Funding Arrangement Plan to include a Statement of Investment Principles (“SIP”) which sets out the Fund’s investment policy, designed to ensure the moneys which the Fund receives from the operator will be appropriately invested to generate the sums necessary to meet the operator’s liabilities when they fall due. As a minimum, the Secretary of State would expect the SIP to include the Fund’s:

- investment objectives;
- attitude to risk and how risk is defined, measured, mitigated and monitored;
- asset allocation strategy, including permitted and prohibited asset types and projected investment returns on each asset class. The Funding Arrangement Plan should set out the basis for the asset allocation strategy and include an economic and/or statistical justification for the projected investment returns; the investment strategy should set out limits to portfolio concentration in each asset class and in any individual investments;
- decision-making authorities, processes and procedures regarding investment decisions;
- performance measurement criteria and benchmarks;
- policy on realising investments;
- policy on exercising rights (including voting rights) attached to investments;
- policy on the extent to which social, environmental or ethical considerations are taken into account in investment decisions;
- mandates to all advisers and managers and associated fee and liability structures; and
- reporting requirements.

**5.7.2** The Fund must recognise and address the risks associated with its investment strategy, including:

- the likelihood of the strategy underperforming the target return by more than 5% in any 3 year period;
- the risk of failing to meet its overall objectives;
- sponsor covenant risk / country risk;
- operator covenant risk;
- risk of inadequate diversification or inappropriate investment (concentration risk);
- issuer risk;

- currency and interest rate risk;
- liquidity risk;
- inflation risk;
- custodian risk; and
- organisational risk of the managers and advisers.

**5.7.3** In making investment decisions, the Fund should act prudently having obtained appropriate professional advice and with due regard to the SIP. The Fund will not be restricted from delegating investment decisions to those with the skills, information and resources to take them effectively, but will remain responsible for the decisions taken by any delegated party.

**5.7.4** The Fund should take account of the suitability of investments having regard to:

- the nature of the operator's future liabilities (especially the influence of inflation);
- the expected due date for disbursements by the Fund;
- the fact that the operator's liabilities are expected to be in Sterling;
- the certainty of expected future disbursements from the Fund; and
- the frequency and level of contributions to the Fund.

**5.7.5** The Fund should review the SIP on a regular basis and, in the light of changing circumstances, to ensure the continued appropriateness of the investment arrangements. Changes to the SIP are likely to amount to a modification which will require approval by the Secretary of State under clause 45 of the Energy Bill.

**5.7.6** It is expected that the SIP will also:

- ensure that the Fund investment strategy is appropriately diversified to reduce investment risk and that to this end, a wide variety of asset classes may be considered including non-traditional asset classes;
- define the restricted circumstances and the limited extent to which the Fund may invest in the operator and the prohibition of certain types of operator-related investments; and
- specify that the investment strategy includes a gradual reduction in investment risk as the end of the generating life of the station approaches.

# 5.8 Payment/disbursement policy

## Decommissioning and Waste Management Liabilities

**5.8.1** Even with a contingency for risk and uncertainty built in, it is important that appropriate governance is exercised by the Fund around disbursements from the Fund. The Funding Arrangement Plan should set out the disbursement policy for the Fund to finance the operator's decommissioning and waste management liabilities including:

- the governance arrangements under which moneys would be disbursed by the Fund in line with the approved DWMP;
- the persons to whom payment will be made; and
- the mechanism for making payments.

**5.8.2** The Funding Arrangement Plan should address when moneys may be disbursed and against what milestones. Adequate safeguards must be in place to ensure that moneys are spent only on costs for which the Funded Decommissioning Programme makes provision and which should be auditable and certified as payable by reference to the Funded Decommissioning Programme.

**5.8.3** The Funding Arrangement Plan should set out the Fund's governance arrangements for overseeing the disbursement of funds. The Fund will be expected to review progress against the Decommissioning and Waste Management Plan on an annual basis and to the extent that a shortfall in funding is anticipated, the operator will be expected to fund the deficit.

**5.8.4** The operator would be expected to demonstrate to the persons responsible for managing the Fund that it has appropriate procedures in place for checking that moneys received from the Fund are being applied against allowable DWMP costs and that milestones for achieving the DWMP are being met. An example of such a procedure would be an internal audit of the use of moneys from the Fund against milestones.

**5.8.5** At the end of the year, the operator should provide an annual report to the persons responsible for managing the Fund setting out differences between the payments from the Fund and the reduction in the operator's liabilities. Where an operator's expenditure does not reduce the operator's liabilities by the required amount, the annual report should set out how the operator intends to mitigate this use of additional funding and should propose, if appropriate, a modification to the DWMP.



- 5.8.6** The Secretary of State would also expect the persons responsible for managing the Fund to review the annual report provided by the operator and to prepare an annual report on whether the Fund is sufficient to meet the expected costs of the DWMP, and to set out remedial steps to be taken if not.

## Long term waste disposal

- 5.8.7** As set out in the guidance on the DWMP (see section 4), the Government would expect to set a fixed unit price based on the operator's projected full share of waste disposal costs at the time when the approvals for the station are given, prior to construction of the station. We expect that the moneys to cover the fixed unit price for the waste disposal service will be paid to the Government as title to and liability for each operator's waste is transferred to the Government. However, we are considering whether there may be a case for some of this amount to be paid to the Government during the power station's generating life. If the Government determines that this would be necessary, we would agree a schedule of payments out of the Fund with each operator at the same time as the Funded Decommissioning Programme is approved. This would ensure that operators are able to design their Fund and investment policies so that early payments can be made out of the Fund during the generating life of the station whilst also ensuring that the Fund, taking into account anticipated growth, will reach the target amount (adjusted to reflect the interim payments made in relation to waste disposal).
- 5.8.8** If geological disposal facilities are not available by the dates agreed in the schedule, the Government would expect to take title to and liability for the waste according to the agreed schedule and would expect to continue storing it on the site where it has hitherto been stored until disposal facilities are available. The costs of maintaining the interim stores during this period would be met by the Government but will have been factored into the risk premium added to the fixed unit price to cover the risk that construction of disposal facilities will not be complete as required by the agreed schedule.

## Change in ownership or control of the nuclear power station operator

- 5.8.9** Guidance covering a change in ownership or control of the operator or the site is set out in paragraphs 5.12.1 – 5.12.9. The Funding Arrangement Plan must be robust against any such change and, in particular, must set out safeguards to ensure that monies are not improperly disbursed by the Fund in this event.

## 5.9 Winding up the Fund

- 5.9.1** Operators will be required to set out when and by what means the Fund will be wound up. The Fund should be wound up only when:
- all liabilities which it was established to satisfy have been fully paid and discharged or if alternative arrangements, which are acceptable to the regulators and the Secretary of State, to meet those liabilities have been put in place; and
  - any surplus moneys have been disbursed as set out below.
- 5.9.2** Any surplus in the Fund remaining once decommissioning and waste management and waste disposal activities are complete and paid for will require to be disbursed in accordance with the objects or purposes of the Fund. The Government will not expect any surplus in the Fund to be paid to the Government.
- 5.9.3** Depending on the structure of the Fund, it is expected that any surplus moneys held by the Fund in respect of decommissioning liabilities may be returned to the operator once decommissioning is complete and all liabilities in respect of decommissioning and waste management have been discharged.
- 5.9.4** Operators will pay a fixed unit price for waste disposal. The Government will be paid the full fixed unit price and any shortfall in the Fund must be made good by operators. Should the actual costs of providing the service prove lower than expected, these lower costs will not be passed on to nuclear operators, who would have gained from certainty of a fixed price and would not have been exposed to the risk of price escalation. If the moneys set aside in the Fund for waste disposal exceed this fixed unit price, Government will not expect this surplus to be paid to Government. The surplus may be disbursed in accordance with the objects or purposes of the Fund, which may include being returned to the operator after the payments to the Government have been made in full.
- 5.9.5** As set out in paragraphs 5.5.1 – 5.5.6, any shortfall in the Fund must be made good by the operator.

## 5.10 Protection against an insufficient Fund

**5.10.1** As noted above, under the existing law, an operator is responsible for all the decommissioning liabilities, waste management liabilities and waste disposal liabilities that arise from the operation of new nuclear power stations. Each operator must ensure that its Funding Arrangement Plan is robust against change, including, for example, any change in regulatory requirements.

**5.10.2** Thus, if (for example):

- the site has to be decommissioned earlier than expected (including as a result of operator insolvency) and there is a shortfall in the accumulated Fund; or
- during decommissioning the Fund proves inadequate to meet the operator's decommissioning costs, the operator is responsible for ensuring that additional funds are available to discharge those liabilities.

**5.10.3** Under the provisions of the Energy Bill, the Secretary of State may impose obligations which arise out of the Funded Decommissioning Programme on persons associated with the operator (such as a parent company) including in a case where the operator fails to comply with its funding obligations under the programme. Furthermore, the Energy Bill provides that the obligations on an operator (or former operator) under a Funded Decommissioning Programme remain until the Secretary of State explicitly releases the operator from its obligations, even if it no longer holds a site licence. The Secretary of State would expect to use these powers with the aim of addressing the risks referred to above, for example, in a case where the operator was a member of a group of companies or a joint venture company and it alone was not capable of addressing these risks to the Secretary of State's satisfaction.

**5.10.4** In addition, each operator must satisfy the Secretary of State that effective and transparent arrangements are in place no later than day one of generation as part of the approved Funded Decommissioning Programme to ensure that the operator will meet its obligations to discharge its liabilities in full. In the Funding Arrangement Plan an operator must set out how it will manage and mitigate the risk that there are insufficient funds. An operator's proposals will be assessed by the Secretary of State on a case by case basis, by reference to the Guiding Principles and the objective, to ensure that the risk of any recourse to public funds whatsoever remains remote at all times.

**5.10.5** An upfront endowment to the Fund no later than day one of generation together with a provision to front load contributions to the Fund during the earlier years of the power station's generating life may be an acceptable form

of security against such risks where it was one amongst several elements of a proposal in this regard and provided it is structured on appropriate terms.

**5.10.6** Alternative forms of security, such as insurance or financial instruments (from an appropriate financial institution) may be acceptable to the Secretary of State to make up a shortfall in the moneys held by a Fund. To the extent that products are not presently available in the market, the Secretary of State would expect operators to work with the financial and insurance industry to develop suitable protections.

**5.10.7** Parent company guarantees, on their own, may not be an acceptable form of security as protection against an insufficient fund. The Secretary of State would expect to find a parent company guarantee acceptable where it was one amongst several elements of a proposal in this regard and where as a minimum, the parent company had an acceptable credit rating at the time the programme was first approved; arrangements are in place to monitor the credit worthiness of the parent company; and if the parent company's credit rating should fall to an unacceptable level, the operator must immediately notify the Secretary of State and ensure supplemental arrangements, which are acceptable to the Secretary of State, are in place.

## 5.11 Proposals for remedial action

- 5.11.1** The operator is under a duty under existing law to meet all the operator's liabilities, which flow from operation of a new nuclear power station (see paragraph 5.10.1). In addition to the regulatory sanctions provided for in Chapter 1 of Part 3 of the Energy Bill and in order to limit the prospect of dispute between the operator and the Fund, the Secretary of State would encourage the operator to set out in its Funding Arrangement Plan what steps that it will take to make good breaches of the FAP (where they are capable of remedy) and what, if any, steps persons responsible for the Fund might also take in such circumstances.
- 5.11.2** For example, the Funding Arrangement Plan might set out the steps which the operator would take to make good (perhaps up to a specified value or over a specified period of time) contributions to the Fund which it had failed to make, or what security the operator would arrange to be put in place where the original security had lapsed or was no longer available.
- 5.11.3** The Secretary of State would expect to see set out the role of persons responsible for managing the Fund in such circumstances, and the powers and responsibilities that they would have in order to achieve such outcomes. The Funding Arrangement Plan should make plain how much notice would be required to be given by each party (in what form) and the time frames within which action would be required to be taken. The Secretary of State would not expect to approve proposals for remedial action unless such action was required to be taken very promptly so as to prevent drift in a situation where a breach had occurred.
- 5.11.4** None of these provisions would relieve the duty on the operator to inform the Secretary of State of its breach. Provided the proposals were acceptable to the Secretary of State and were adhered to, the Secretary of State would take into account the extent to which the remedial action proposals were adhered to when determining what, if any, enforcement action to take in relation to such a breach.

## 5.12 Change in ownership or control of the operator or site

- 5.12.1** The Energy Bill gives the Secretary of State powers to impose obligations under the Funded Decommissioning Programme on bodies corporate which are associated with the operator, for example parent companies or sister companies, in order to ensure that prudent provision is made for the financing of decommissioning and clean up.
- 5.12.2** The Funding Arrangement Plan must set out the consequences of a change in control of the operator or site and the steps to be taken to inform the Secretary of State and give him the opportunity to approve, approve subject to modifications or conditions or to reject any changes to the Funded Decommissioning Programme in good time prior to such a change of control occurring.
- 5.12.3** Where the parent concerned is subject to obligations under the programme, the Funding Arrangement Plan should require the operator to re-submit its Funding Arrangement Plan for approval. Where the parent is not under such obligations, its Funding Arrangement Plan need only require the operator to re-submit its Funding Arrangement Plan for approval where the Secretary of State requires it to do so in practice. In certain circumstances, in particular where the change of control leads to changes to the Decommissioning and Waste Management Plan, the Secretary of State would expect the Funding Arrangement Plan to impose an obligation on the operator to re-submit the Funded Decommissioning Programme as a whole for approval.
- 5.12.4** So far as sister companies are concerned (i.e. where as a result of a transaction they will cease to be associated with the operator) where they are subject to obligations under the programme, the Funding Arrangement Plan should make similar provision as for parent companies subject to an obligation. Where the sister company is not subject to obligations under the programme the Secretary of State would not expect the Funding Arrangement Plan to require the operator to inform him about the proposed changes nor to make provision for re-submission of the Funding Arrangement Plan or the programme as a whole. Where (in either case) the cessation of the relationship with the operator leads to changes to the DWMP, the Secretary of State would expect the FAP to impose an obligation on the operator to re-submit the Funded Decommissioning Programme as a whole for approval.
- 5.12.5** Breach of an obligation in the Funding Arrangement Plan to notify the Secretary of State of the change or to submit the relevant parts of the

programme (or the whole of the Funded Decommissioning Programme where appropriate) for approval would (unless the defence in clause 53(2) of the Energy Bill applies) amount to a criminal offence under clause 53 of the Energy Bill, which is punishable with a fine or imprisonment or following conviction on indictment, both. Where the offence was committed with the consent or connivance of, or was attributable to neglect on the part of an officer of the operator, that officer (as well as the operator itself) is liable to criminal prosecution and subject to the same penalties as the operator.

**5.12.6** Before approving the Funding Arrangement Plan (or the Funded Decommissioning Programme, as the case may be), the Secretary of State will expect confirmation from the Fund that it is satisfied that the proposed revised funding arrangements, if any, will comply with the Objective. For this purpose, documents submitted in support of the Funding Arrangement Plan should set out the matters to which the Fund would have regard in coming to that decision. The Secretary of State would not, for example, expect to release the vendor from its obligations under the programme if the Fund were not so satisfied; and would not expect the Fund to release the vendor from its obligations to the Fund. Where necessary, the Secretary of State might impose new obligations on the vendor, the operator, the purchaser or another associated company of the operator as appropriate to ensure that the Objective were met.

**5.12.7** In approving the Funded Decommissioning Programme and determining whether to modify to impose fresh obligations on certain parties (or not to release parties from obligations to which they are already subject) the Secretary of State will have regard to such matters as:

- the views of the Fund on the proposed funding arrangements;
- the financial strength of the proposed new owner, or investors, and the support that it will provide to the operator to ensure that the Fund accumulates sufficient funds to meet the operator's liabilities under the Decommissioning and Waste Management Plan; and
- the current level of funding as compared to current estimates of the operator's liabilities and plans for future funding levels.
  
- evidence of failure by any of the parties to adhere to their obligations under the Funded Decommissioning Programme.

**5.12.8** Further information about the exercise of the power to modify in cases where a change of control or other relevant change occurs is set out in paragraphs 5.13.1 – 5.13.10.

**5.12.9** Assuming a change of ownership of the site leads to a change in the identity of the site licensee, the Energy Bill ensures that a Funded Decommissioning Programme must be submitted by the new operator (and approved by the Secretary of State) prior to its starting to operate the station. It is a criminal offence to fail to operate a new nuclear power station without an approved Funded Decommissioning Programme in place.

## 5.13 Secretary of State's power to modify a Funded Decommissioning Programme

- 5.13.1** The matters to which the Secretary of State would have regard when determining whether to approve (or to approve with modifications) a Funding Arrangement Plan when the Funded Decommissioning Programme is first submitted for approval are set out in paragraphs 5.1.1 – 5.12.9. Information about some of the circumstances in which operators are required to submit modifications for approval by the Secretary of State following first approval of the programme are set out in paragraphs 5.6.1 – 5.6.16. Paragraphs 5.13.2 – 5.13.10 are principally concerned with cases where the Secretary of State may choose to exercise his power to modify the Funded Decommissioning Programme once it had been approved.
- 5.13.2** In determining whether (and if so, on what terms) to propose a modification to the Funding Arrangement Plan or to approve a modification put forward by the operator or another person with obligations under the programme, the Secretary of State would have regard to the matters set out in this guidance, and in particular whether the modification is a necessary, appropriate or proportionate means to ensure that the Objective is met and the Guiding Principles complied with. Where operators or other such persons consider proposing a modification to the Funding Arrangement Plan they should therefore consider how it affects the prospects of the Objective being met and complies with the Guiding Principles.
- 5.13.3** It is for operators to determine whether to propose a modification to the programme for approval by the Secretary of State (subject to any regulations made under clause 46 of the Energy Bill which require operators to seek the approval of the Secretary of State) (see paragraphs 5.6.1 – 5.6.16). Modifications proposed by the operator might include changes to cost estimates or contribution schedules to take account of changes to the station or investment returns, but might also include changes to the Funded Decommissioning Programme to account for technical or operational changes to the station which have had an effect on the cost estimates of decommissioning liabilities or the amount of waste disposal liabilities.
- 5.13.4** The Secretary of State can envisage requiring modifications in the following non-exhaustive situations.
- 5.13.5** Where the operator or another person with obligations under the programme is in breach of their obligations under the programme.



- The Secretary of State would not expect to modify a Funded Decommissioning Programme in every case where a person is in breach. In many cases it may be sufficient to ensure that the person brings itself back into compliance with the programme and remedies the consequences of the breach. The Energy Bill gives the Secretary of State varied powers (such as the power to impose a direction under clause 54) to ensure this outcome.
- Equally, it may be that merely requiring the person to bring itself back into compliance with the programme would not be appropriate. For example, it may no longer be sufficient, appropriate or proportionate to seek to hold a person to all its obligations in the original approved programme because of a change in that person's circumstances. Alternatively it might be appropriate to introduce conditions to the approval of the programme requiring certain action to be taken or adherence to certain obligations in the programme. Breach of that condition may result in an offence under clause 43 of the Energy Bill if the station continues to operate.

**5.13.6** Where a change of control of the operator, or a change of a body corporate which is associated with the operator is proposed<sup>47</sup>.

- Guidance about what is expected from operators if there is a change of control of the operator or of another person with obligations under the programme is set out in paragraphs 5.12.1 – 5.12.9, which touch on the issue of modifications.
- The Secretary of State's primary concern in such an eventuality would be to ensure that the Funding Arrangement Plan continues to make adequate financial provision for the operator's liabilities irrespective of the change of control. In the case of a change of control, the Secretary of State might propose modifications to:
  - adjust the liability of the outgoing parent company under any guarantee or other support provided in relation to the operator's liabilities to take account of the financial circumstances of the incoming parent company;
  - release the outgoing parent company from its obligations;
  - impose obligations on the outgoing parent company where previously it had none;
  - adjust existing obligations on other parent companies (for example, in the case of a joint venture) to take account of the position of the incoming parent company;
  - impose fresh obligations on other existing group companies to take account of the incoming parent company's position;
  - adjust obligations on the operator accordingly.

<sup>47</sup> A change in the identity of the operator is not addressed in paragraphs 5.13.1 – 5.13.10, because clause 41(2) (b) requires a new operator of an existing "new" station to submit a new Funded Decommissioning Programme for approval in any event, therefore the powers under clause 44 et seq would not arise (although modifications would be possible under clause 42(a)). In addition clause 60 gives the Secretary of State the power to hold the old operator to certain obligations under the programme.

**5.13.7** Where a technical or operational change increases the net present value of the then current estimate of the operator's liabilities above the materiality threshold.

- As is clear from paragraph 5.6.12, the Secretary of State would expect the operator to seek the Secretary of State's approval to any modifications to the Funded Decommissioning Programme (other than those to which regulations made under clause 46 of the Energy Bill apply) which such change necessitates in accordance with the procedure laid down in clauses 44 and 45 of the Energy Bill. Where the operator fails to do so, the Secretary of State might propose the necessary modifications, not least to ensure that the operator does not remain in breach of the programme indefinitely.

**5.13.8** Where the operator seeks permission from the regulators to extend the life of the station beyond the period originally anticipated<sup>48</sup>.

- As set out in the DWMP guidance, an operator may seek to negotiate arrangements at the outset which apply (for example, to waste disposal) in the event of a life extension. Even if it does not, a proposal to extend the life of the station would necessitate amendments to the Funded Decommissioning Programme for which the Secretary of State would expect the operator to seek his approval. Where the operator failed to do so, the Secretary of State would expect to propose modifications as necessary himself.

**5.13.9** It is possible to envisage other circumstances which give rise to reasonable doubts about the ability of the operator or an associated body corporate to discharge its obligations under the programme where the Secretary of State may consider whether to propose a modification. Examples include where the credit rating of the operator or of an associated company is downgraded and no appropriate alternative security is capable of being put in place or put in place sufficiently promptly; where there is a significant and more than short lived reduction in the net asset value of such a person; or where insolvency proceedings are taken in respect of, or threatened against, such a person.

**5.13.10** In all cases, the Secretary of State may only approve a modification (whether proposed by him or by another person) if he does so with the aim of ensuring that prudent provision is made for the activities regulated by the Energy Bill (see clause 45(7) of the Energy Bill).

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<sup>48</sup> It is recognised that this scenario is likely to fall within paragraph 5.13.7 above but is included for the avoidance of doubt.



## 5.14 Glossary

**5.14.1** For the avoidance of doubt, please note that this glossary only refers to the Funding Arrangement Plan guidance.

**Associated companies** – means associated bodies corporate within the meaning of clause 62 of the Energy Bill 2008.

**Commissioning** – means the process during which plant components and systems, having been constructed or modified, are made operational and verified to be in accordance with design assumptions and to have met the appropriate safety criteria.

**Contribution schedule** – means the schedule of payments which the operator is required to make to the Fund to meet the operator's liabilities under the Funded Decommissioning Programme submitted to the Secretary of State for approval and approved by him (see 5.5).

**Decommissioning** –

- (a) Decommissioning begins when the reactor is shut down with no intention of further use for the purpose of generating electricity.
- (b) Decommissioning means dismantling the station and remediating the site including waste management but not including waste disposal to a condition agreed with the regulators and the planning authority
- (c) Decommissioning ends when all station buildings and facilities have been removed and the site has been returned to an end state which has been agreed with the regulators and the planning authority.

**Decommissioning liabilities** – means the liabilities which arise in relation to decommissioning which include the waste management liabilities but exclude the waste disposal liabilities.

**Decommissioning and Waste Management Plan (DWMP)** – means that part of the Funded Decommissioning Programme submitted to the Secretary of State by the operator which addresses the matters set out in clauses 41(7)(a) and (b) of the Energy Bill.

**Full share of waste management costs** – means the waste disposal liabilities and the waste management liabilities.

**Fund** – means a trust or other vehicle constituted for the purpose of accumulating, managing and investing moneys obtained from the operator for the purpose of the Objective and includes, as the context permits or requires, any person which is a member of, or is responsible for the management of that entity.

**Fund assets** – means financial assets held by the Fund for the purpose of the Objective.

**Funding Arrangement Plan** – means that part of the Funded Decommissioning Programme which addresses the matters set out in clause 41(7)(c) of the Energy Bill.

**Generating life time** – means the period beginning with the date on which the power station first generates electricity, and ending with the date on which the reactor is shut down with no intention of further use for the purpose of generating electricity.

**Guiding Principles** – means the principles set out in paragraph 5.2.6 which the Secretary of State may apply when considering whether to approve, approve with modifications or modify a previously approved Funded Decommissioning Programme.

**Hazardous waste** – has the meaning set out in clause 63 of the Energy Bill.

**Higher activity waste** – means intermediate level waste and spent fuel.

**Independent fund** – means a Fund which complies with the principle of independence set out in paragraph 5.2.6 above.<sup>49</sup>

**New nuclear power station** – a nuclear installation constructed after the commencement of clause 41 of the Energy Bill 2008 to which that clause applies (other than by virtue of an order made under clause 58 of the Bill).

**Nuclear Island** – includes any part of the facility on a relevant site which might give rise to radioactive waste or otherwise affect the operator's liabilities.

**Objective** – means the objective set out in paragraph 5.2.2.

**Operator** – the legal person who holds a licence under the Nuclear Installations Act 1965 in relation to the site to which the programme relates, or who has applied for such a licence in relation to such a site.

**Operator's liabilities** – means those liabilities set out in the DWMP which the Fund is required to meet being the sum of the decommissioning liabilities and the waste disposal liabilities.

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<sup>49</sup> Paragraph 5.3.5 sets out details of a vehicle which the Secretary of State considers may meet the independence principle.

**Radioactive waste** – has the meaning set out in Section 2 of the Radioactive Substances Act 1993.

**Relevant site** – means the site to which the Funded Decommissioning Programme relates.

**Target Value** – means the value or sum which the Fund is required to achieve under the terms of the approved Funded Decommissioning Programme.

**Waste management** – means:

- (a) treating, storing and transporting higher activity waste pending disposal pursuant to the schedule agreed with the Government;
- (b) treating, storing, transporting and disposing of low level waste;
- (c) treating, storing, transporting and disposing of non-radioactive hazardous waste; and
- (d) planning undertaken during the generating life of the station or subsequently which is necessary in order to carry out decommissioning.

**Waste disposal** – means disposing of higher activity waste produced on the relevant site in the manner and subject to a schedule agreed with the Government<sup>50</sup>.

**Waste disposal liabilities** – means the liability to pay the sum charged to the operator by the Government in connection with an approved Funded Decommissioning Programme in relation to the disposal by Government of higher activity waste produced on the relevant site.

**Waste management liabilities** – means the cost of carrying out waste management insofar as the cost of undertaking those activities is required to be met from the Fund <sup>51</sup>.

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<sup>50</sup> For the purposes of this glossary the references to the Government in the context of setting a fixed unit price for waste and a schedule for taking title to and liability for such waste should be read as references to central Government and other bodies acting on behalf of and funded by central Government.

<sup>51</sup> Table 6 sets out more information about the activities which the Secretary of State would expect to be paid for by the Fund.

# Annex A: Reporting requirements

Further to paragraphs 5.6.1 – 5.6.16 of the Funding Arrangement Plan guidance, below is the annual and quinquennial reporting structure the Secretary of State considers would meet the Guiding Principles.

## Annual Report

- 1** The operator will be expected to prepare an annual report (promptly following the year to which it relates) setting out operational and technical changes to the site which have an effect, above a de minimis reporting threshold which we would expect to be set out in regulations, on the cost estimates of decommissioning liabilities or the amount of waste disposal liabilities included in the Funded Decommissioning Programme.
- 2** The annual report should also include details of other changes (such as licence amendments or regulatory requirements), above a de minimis reporting threshold which we would expect to be set out in regulations, that have occurred over the previous year and which have an effect on the cost estimates of decommissioning liabilities or the amount of the waste disposal liabilities included in the Funded Decommissioning Programme. The annual report should also include an explanation of the increase in costs for inflation.
- 3** As set out in paragraph 5.6.13, on the annual review, where the cumulative effect of such changes (operational, technical or otherwise) on the cost estimates of decommissioning liabilities or the amount of the waste disposal liabilities is above a materiality threshold, which we expect would be set out in regulations, then the Secretary of State would expect the operator and the persons responsible for managing the Fund to propose for approval by the Secretary of State any modification to the Funded Decommissioning Programme necessary to update the programme to take into account these changes.
- 4** The annual report prepared by the operator should be made available to the Fund promptly after it has been prepared. The Secretary of State would expect the persons responsible for managing the Fund to review the operator's annual report to satisfy themselves, with reference to the information in the operator's annual report, that no material changes (operational, technical or otherwise) have occurred in the previous annual period. The Fund would then be expected to prepare and provide to the Secretary of State the annual report from the operator and an annual report on the size and performance of the Fund.

- 5 The persons responsible for managing the Fund will be expected to take advice from suitably qualified experts operating under appropriate levels of professional indemnity cover in reviewing the operator's annual report and in relation to the review of the Fund.
- 6 The Secretary of State would expect the annual report to be drawn up and submitted to him promptly following the end of the period to which it relates.
- 7 The Secretary of State would expect the annual report to be addressed to him.
- 8 During the decommissioning phase, the operator and the persons responsible for managing the Fund will be expected to provide annual reports as outlined in paragraph 5.8.5.

## Quinquennial Report

- 9 Both the operator and those persons responsible for managing the Fund will be expected to prepare and publish an in-depth review of the Funded Decommissioning Programme on a quinquennial basis. The Secretary of State would expect the operator to be responsible for reporting on matters which concerned the Decommissioning and Waste Management Plan, and the persons responsible for managing the Fund to report on matters which concerned the Funding Arrangement Plan.
- 10 The Secretary of State would expect the quinquennial reports to address the following issues:
  - First, the operator should provide a detailed summary of the changes (operational, technical or otherwise) to the site which have had an effect on the cost estimates of the decommissioning liabilities or the amount of waste disposal liabilities as set out in the annual reports for each of the previous five years. The operator should also carry out a technical review as to the adequacy of the arrangements set out in the Decommissioning and Waste Management Plan, taking into account for example, new advances in technology or changes to established practices. The estimates of the costs of decommissioning liabilities and the amount of waste disposal liabilities should be re-assessed in the light of the changes and the technical review and the operator should propose modifications to the Decommissioning and Waste Management Plan to take these factors into account. The operator should submit its report of the in-depth review of the Decommissioning and Waste Management Plan to the persons responsible for managing the Fund promptly after it has been prepared.
  - Second, the persons responsible for managing the Fund should be satisfied with the adequacy and the accuracy of the information in the operator's report and the proposed modifications to the Decommissioning and Waste Management Plan and approve, or, as necessary, suggest modifications to the proposed amendments to the Decommissioning and Waste Management Plan.



- Third, the persons responsible for managing the Fund should provide a detailed summary of the size and performance of the Fund based on the annual reports for each of the previous five years and taking into account, for example, a change in investment policy or share price fluctuations affecting the value of the investments. The persons responsible for managing the Fund should also carry out a review of the expected performance of the Fund and the likelihood that the Fund would generate sufficient moneys to discharge the operator's liabilities in full as and when those moneys were needed.
- Fourth, the Secretary of State would also expect those persons responsible for managing the Fund to review the Funding Arrangement Plan in the light of the changes referred to and to consider, in particular, what, if any, modifications to the Funding Arrangement Plan were necessary to ensure the Fund meets the operator's liabilities. The Secretary of State would also expect those persons to review and take into account actual and expected investment returns and expected station life. The persons responsible for managing the Fund will be expected to take advice from suitably qualified experts operating under appropriate levels of professional indemnity cover.

- 11** The Secretary of State would expect the quinquennial report to set out, at least, the re-assessed cost estimates for decommissioning liabilities, changes to the amount of waste disposal liabilities, the expected adequacy of the Fund to meet its liabilities and modifications to the Funded Decommissioning Programme for the Secretary of State to approve.
- 12** The Secretary of State would expect the quinquennial report to be drawn up and submitted to him promptly following the end of the period to which it relates.
- 13** The Secretary of State would expect the quinquennial report to be addressed to him.
- 14** The quinquennial review will replace the annual review for the year for which it is prepared.

# Annex B: The Consultation Code of Practice Criteria

The six consultation criteria:

- 1 Consult widely throughout the process, allowing a minimum of 12 weeks for written consultation at least once during the development of the policy.
- 2 Be clear about what your proposals are, who may be affected, what questions are being asked and the timescale for responses.
- 3 Ensure that your consultation is clear, concise and widely accessible.
- 4 Give feedback regarding the responses received and how the consultation process influenced the policy.
- 5 Monitor your department's effectiveness at consultation, including through the use of a designated consultation co-ordinator.
- 6 Ensure your consultation follows better regulation best practice, including carrying out a Regulatory Impact Assessment if appropriate.

The complete code is available on the Cabinet Office's web site, address <http://www.cabinetoffice.gov.uk/regulation/consultation/index.asp>

