

**The decision on the application to carry out a
decommissioning project at Bradwell Power Station under
the Nuclear Reactors (Environmental Impact Assessment
for Decommissioning) Regulations 1999**

A report prepared by HM Nuclear Installations Inspectorate
on behalf of the Health and Safety Executive

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FOREWORD

This document reports on the Health and Safety Executive's decision to grant consent for a decommissioning project at Bradwell Power Station to the licensee, Magnox Electric plc, under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999. The Regulations are enforced by Her Majesty's Nuclear Installations Inspectorate – the NII – that is responsible for enforcing nuclear safety on nuclear licensed sites.

NII has done its utmost to ensure that the process of considering potential environmental impacts has been open and inclusive. It has involved extensive public consultation, and there has been a great deal of interest shown by national bodies and local groups alike. I sincerely thank everyone who has been involved in this important work, and especially those who took the time to send comments on the documentation provided by the licensee.

All of us, and particularly the local population, have a keen and vested interest in the effectiveness of controlling environmental impacts during the decommissioning of the Bradwell Power Station. NII has attached conditions to the Consent to require the licensee to provide a copy of its environmental management plan and its subsequent revisions to NII. Importantly, there is also a requirement for the licensee to keep the public informed on progress on a regular basis through making their environmental management plans available for public inspection.

I believe our decision-making process has been open and transparent. Openness and transparency will continue to be a key factor in managing environmental impacts throughout the coming decades of this decommissioning project. I hope that you will find this report helpful and that it gives you a clear understanding of the basis for our decision.

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SUMMARY

European Council Directive 85/337/EEC, as amended by Council Directive 97/11/EC, sets out a framework on the assessment of the effects of certain public and private projects on the environment. The Directive is implemented in Great Britain for decommissioning nuclear reactor projects by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999.

The intention of the Directive and Regulations is to involve the public through consultation in considering the potential environmental impacts of a decommissioning project, and to make the decision-making process on granting consent open and transparent.

The Regulations require the licensee to undertake an environmental impact assessment, prepare an environmental statement that summarises the environmental effects of the project, and apply to the Health and Safety Executive (HSE) for consent to carry out a decommissioning project. There is an optional stage where the licensee may request from HSE an opinion on what the environmental statement should contain (called a pre-application opinion).

The licensee of Bradwell Power Station, Magnox Electric plc, requested a pre-application opinion and provided information in a scoping report in December 2000. HSE undertook a public consultation on the scoping report and provided its pre-application opinion in April 2001. The licensee applied to HSE for consent to carry out a decommissioning project and provided an environmental statement in April 2002. Following a public consultation on the environmental statement, HSE requested further information that was subsequently provided by the licensee. A further public consultation was undertaken on the further information that ended in August 2003. All these public consultations involved around 70 organisations.

HSE granted consent to carry out a decommissioning project at Bradwell Power Station under the Regulations in 2003, and attached conditions to the Consent.

HSE took relevant factors into account when reaching its decision to grant consent. In brief, these were: the adequacy of the information provided in the environmental statement and further information; the conclusion that environmental benefits would far outweigh detriments; the prediction that there would be no significant effects on the environment of other countries; and the recognition that some issues would be adequately covered elsewhere, such as through other regulatory regimes.

The conditions attached to the Consent relate to mitigation measures to prevent, reduce and, if possible, offset adverse environmental effects of the project. In brief, Magnox Electric plc must prepare an environmental management plan that identifies mitigation measures, reports on implementation and effectiveness of mitigation measures, and reports on changes to mitigation measures and reasons for changes in light of experience. HSE must be notified in advance of any significant change to a mitigation measure to control any major adverse effects on the environment. A copy of the environmental management plan and its subsequent revisions must be sent to HSE and made available to the public.

CONTENTS	Page
FOREWORD	iii
SUMMARY	iv
CONTENTS	v
INTRODUCTION	1
BACKGROUND	1
Legislative framework for nuclear safety	1
Nuclear Installations Act 1965.....	1
Other legislation dealing with nuclear and radiological hazards	2
Effects of decommissioning on other countries	2
Regulators and others working together	2
Legislative process under EIADR99.....	3
Application for consent to carry out a decommissioning project.....	3
Public consultation on an environmental statement	3
Public consultation on further information	4
Change or extension to a decommissioning project.....	4
Effects of decommissioning on other countries	4
Granting consent and attaching conditions	4
Transparency of HSE’s decision on an application	4
APPLICATION TO CARRY OUT A DECOMMISSIONING PROJECT	5
The consultation process	5
Request for a pre-application opinion.....	5
Public consultation on the environmental statement	5
Public consultation on the further information	5
Organisations involved in the consultation process.....	6
Topics raised by consultees on the environmental statement – an overview	6
Request for further information – including topics raised by consultees.....	7
Topics not pursued for further information – topics raised by consultees.....	8
Topics raised by consultees on the further information – an overview	9
REASONS FOR GRANTING CONSENT	10
Decision to grant consent.....	10
Information provided.....	10
Environmental benefits and detriments	11
Effects on other countries.....	11
Issues covered elsewhere – town and country planning	12
Issues covered elsewhere – health, safety and environment legislation	12

Issues covered elsewhere – decommissioning timetables	13
Current Government policy	13
Review of Government policy.....	13
European Commission initiatives	13
Quinquennial reviews (QQRs).....	14
Options for decommissioning timetables.....	14
MEASURES TO CONTROL MAJOR ADVERSE ENVIRONMENTAL EFFECTS	15
CONDITIONS ATTACHED TO THE CONSENT	15
Content of the conditions.....	15
Reasons for the conditions.....	16
Condition 1	16
Condition 2.....	16
Condition 3.....	16
Condition 4.....	17
Condition 5.....	17
Condition 6.....	17
REFERENCES.....	19
GLOSSARY OF TERMS AND ABBREVIATIONS.....	20
ANNEX 1 Pre-application opinion	22
ANNEX 2 HSE Library and Information Centres	37
ANNEX 3 Consultees on the environmental statement.....	38
ANNEX 4 Consultees who responded on the environmental statement	41
ANNEX 5 Letter requesting further information on the environmental statement	42
ANNEX 6 Consultees who responded on the further information	49
ANNEX 7 Reasons for further information on the environmental statement	50
ANNEX 8 Reasons for topics not pursued for further information	54
ANNEX 9 Reasons for not seeking further clarification	57
ANNEX 10 Consent and conditions	59
ANNEX 11 Summary of environmental benefits and detriments.....	62

INTRODUCTION

1. European Council Directive 85/337/EEC, as amended by Council Directive 97/11/EC, sets out a framework on the assessment of the effects of certain public and private projects on the environment. It is known as the Environmental Impact Assessment (EIA) Directive.
2. The EIA Directive is implemented in Great Britain for development projects relevant to the nuclear industry by the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (TCPR99) and the Environmental Impact Assessment (Scotland) Regulations 1999. These Regulations include developments such as installations for the processing and storage of radioactive waste. The competent authorities for these Regulations are the relevant local planning authorities.
3. The EIA Directive is implemented in Great Britain for decommissioning nuclear reactor projects by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (EIADR99). These Regulations cover the dismantling or decommissioning of nuclear power stations and other nuclear reactors. The competent authority for EIADR99 is the Health and Safety Executive (HSE).
4. The licensee of Bradwell Power Station, Magnox Electric plc (referred to in this document as Magnox Electric), applied to HSE for consent to carry out a decommissioning project under EIADR99 in April 2002.
5. This document reports on HSE's decision to grant consent for a decommissioning project at Bradwell Power Station. It describes the content of the conditions attached to the Consent, the main reasons and considerations for the decision, and a description of the main measures that Magnox Electric will take to control any major adverse effects of the decommissioning project on the environment.

BACKGROUND

Legislative framework for nuclear safety

Nuclear Installations Act 1965

6. The Health and Safety at Work etc Act 1974 (HSWA74) is primarily a statute for securing, amongst other things, the health and safety of persons at work and protecting others against the risks to their health and safety in connection with the activities of persons at work. HSWA74 places duties on employers and employees, establishes the Health and Safety Commission and HSE, and provides for health and safety regulations. HSWA74 also provides for the appointment of inspectors and defines the powers available to them. There are also provisions relating to the disclosure of information and to offences. In relation to nuclear installations, it incorporates the licensing parts of the Nuclear Installations Act 1965 (NIA65) as relevant statutory provisions.
7. NIA65 is the main piece of legislation used to regulate the safety of nuclear installations. It was amended in 1974 when HSE was created to allow for, amongst other things, the substitution of HSE as the licensing authority. Under NIA65, no site may be used for the purpose of installing or operating any nuclear reactor or prescribed nuclear installation unless a nuclear site

licence has been granted to a corporate body by HSE and is for the time being in force.

8. Under NIA65, HSE may at any time attach to a licence such conditions as appear necessary or desirable in the interests of safety, or fit with respect to the handling, treatment and disposal of nuclear matter. These conditions give HSE powers to directly regulate the licensees' activities using consents, approvals, directions, specifications, agreements and notifications. In addition, the goal setting nature of the licence conditions requires each licensee to develop compliance arrangements which best suit its business needs provided they demonstrate that safety is being managed adequately.

Other legislation dealing with nuclear and radiological hazards

9. A range of other legislation dealing with nuclear and radiological hazards applies to nuclear licensed sites in addition to NIA65. Radiological protection under routine and emergency situations are regulated under the Ionising Radiations Regulations 1999 (IRR99) and Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR), respectively, and enforced by HSE. Radioactive discharges are regulated under the Radioactive Substances Act 1993 (RSA93) and enforced by the Environment Agency (EA) in England and Wales, and Scottish Environment Protection Agency (SEPA) in Scotland.

Effects of decommissioning on other countries

10. Decommissioning is one of the activities for which the European Commission requires a submission by governments of Member States under Article 37 of the Euratom Treaty. The submission identifies the potential impacts on Member State countries of the decommissioning strategy of a particular nuclear installation.
11. EIADR99 contain arrangements for consultation with other States party to the Agreement on the European Economic Area (EEA) if a decommissioning project is likely to have significant environmental effects on those States (see paragraph 22); EIADR99 do not require a submission to the European Commission.

Regulators and others working together

12. Regulators and others work together on matters of mutual interest, and in particular, there are administrative arrangements between HSE and EA, SEPA and the Food Standards Agency (FSA). When considering discharge authorisations, for example, EA and SEPA consult HSE and FSA, and FSA undertakes monitoring of terrestrial and aquatic food.
13. Regulators and others also work together in other areas. The lead on the submission under Article 37 of the Euratom Treaty, for example, is with the Department for Environment, Food and Rural Affairs for nuclear installations in England and Wales, and with the Scottish Executive for nuclear installations in Scotland. The submission is prepared by EA or SEPA, as appropriate, in consultation with HSE and FSA.

Legislative process under EIADR99

Application for consent to carry out a decommissioning project

14. The intention of the EIA Directive and EIADR99 is to involve the public through consultation in considering the potential environmental impacts of a decommissioning project, and to make the decision-making process on granting consent open and transparent.
15. EIADR99 came into force in November 1999. Since then, any licensee wishing to begin to decommission a nuclear power station or other nuclear reactor (as defined) must apply for consent to carry out a decommissioning project under EIADR99, undertake an environmental impact assessment and prepare an environmental statement that summarises the environmental effects of the project.
16. When planning to undertake an environmental impact assessment and prepare an environmental statement, there is an optional stage where the licensee may request from HSE an opinion on what the environmental statement should contain (called a pre-application opinion). In such a case, the licensee must provide information (such as in the format of a scoping report) on which HSE may base its opinion.
17. When preparing its opinion, HSE must consult and take into account the views of the consultation bodies identified in EIADR99, which are the local planning authority, local highway authority, any principal council for the area (if it is not the local planning authority), and a range of environmental organisations and agencies, namely: the Countryside Agency (formerly the Countryside Commission), English Nature (formerly the Nature Conservancy Council for England) and EA in England; Countryside Council for Wales and EA in Wales; and Scottish Natural Heritage and SEPA in Scotland. HSE may also consult and take into account the views of other organisations.
18. The environmental statement must provide the information in Schedule 1 to EIADR99 that is reasonably required and which the licensee can reasonably compile. In brief, the environmental statement should contain a description of the following: the project (including aspects such as physical characteristics and expected emissions); main alternatives (options) studied by the licensee; aspects of the environment likely to be significantly affected (such as water and air); likely effects on the environment (such as short-, medium- and long-term effects); and measures envisaged to prevent, reduce and where possible offset any significant adverse environmental effects. The environmental statement must also contain a non-technical summary of the information provided.

Public consultation on an environmental statement

19. Once the licensee has undertaken an environmental impact assessment, applied for consent and provided an environmental statement, a public consultation must be carried out on the environmental statement. This public consultation is broader than that on the scoping report. It not only includes the consultation bodies and other organisations that HSE may wish to consult, but also local people since the licensee must publicise the environmental statement in at least one newspaper local to the site, make copies of the

environmental statement available for public inspection at one or more locations near the site, and invite people to write to HSE with their views.

Public consultation on further information

20. If HSE is of the opinion that further information is necessary before it can make its decision, then HSE may ask the licensee for further information. In such a case, public consultation is carried out on the further information under arrangements similar to those for the public consultation on the environmental statement.

Change or extension to a decommissioning project

21. If there is a change or extension to any decommissioning project that may have significant adverse environmental effects, the licensee must apply to HSE for a determination as to whether the change or extension should be subjected to an environmental impact assessment. This requirement is relevant irrespective of whether the decommissioning project began after or before EIADR99 came into force (that is, whether consent for the project was granted under EIADR99, or whether the project began before November 1999 when such consent was not required). If HSE decides that such an assessment is necessary, then the licensee must apply for consent to carry out that change or extension to the decommissioning project and provide an environmental statement on that change or extension to support the application. A public consultation must be carried out on that environmental statement.

Effects of decommissioning on other countries

22. EIADR99 contain arrangements for consultation with other States party to the Agreement on the EEA if a decommissioning project is likely to have significant environmental effects on those States. The consultation is through the Secretary of State with the lead for the EIA Directive. These arrangements apply to both new decommissioning projects and to changes or extensions to existing projects requiring environmental impact assessment.

Granting consent and attaching conditions

23. At the end of the public consultation on the environmental statement and further information (if requested), HSE must take into account the views of consultees and, if appropriate, responses from EEA States, when making its decision on whether or not to grant consent for a decommissioning project under regulation 8(3) of EIADR99. If HSE decides to grant consent, HSE may attach conditions as may appear to it to be necessary or desirable in the interests of limiting the impact of that project on the environment under regulation 8(4) of EIADR99.

Transparency of HSE's decision on an application

24. At the end of the process when HSE has made its decision on whether or not to grant consent for a new decommissioning project or a change or extension to an existing project, HSE must: inform the licensee and the Secretary of State of the decision under regulation 11(a); inform the public by publishing a notice in a local newspaper under regulation 11(b); and make available a statement (a report) for public inspection under regulation 11(c) of EIADR99. This report must contain: the content of HSE's decision and, if consent is

granted, the content of any conditions attached to that consent; the main reasons and considerations on which the decision is based; and a description, where necessary, of the main measures that the licensee will take to avoid, reduce and, if possible, offset any major adverse effects of the decommissioning project on the environment.

APPLICATION TO CARRY OUT A DECOMMISSIONING PROJECT

The consultation process

Request for a pre-application opinion

25. Magnox Electric wrote to HSE in December 2000 to request a pre-application opinion on what the environmental statement for Bradwell Power Station should contain. Magnox Electric provided information in the format of a scoping report. HSE consulted the consultation bodies and other organisations that it wished to consult (including all members of the Local Community Liaison Committee (LCLC)) on that report during January to April 2001. HSE's pre-application opinion was sent to Magnox Electric in April 2001. The pre-application opinion was copied to consultees in May 2001, namely, the consultation bodies and other organisations that were consulted by HSE (including individual members of the LCLC who provided comments). The pre-application opinion was made available on HSE's web-site, and a copy is appended as Annex 1. Appendix 1 to Annex 1 lists the consultees who responded on the scoping report and who were content for their names to be made publicly available.

Public consultation on the environmental statement

26. Magnox Electric wrote to HSE to apply for consent to carry out a decommissioning project at Bradwell Power Station and provided an environmental statement in April 2002. HSE consulted the same bodies and organisations on the environmental statement that were involved in the consultation on the scoping report. In addition, Magnox Electric publicised the environmental statement in the local press (Maldon and Burnham Standard, Essex County Standard, Essex Chronicle and Mersea Courier) to involve local people. HSE publicised the consultation on the environmental statement on its web-site which had a direct link to Magnox Electric's web-site. Magnox Electric made copies available for public inspection at five locations near the site, and HSE made copies available at the library of its office nearest to the site (Chelmsford) and its Information Centres (Bootle, London and Sheffield); HSE's addresses are listed in Annex 2.

27. The public consultation period ended in September 2002. The consultees who were contacted by HSE are listed in Annex 3. The consultees who responded and were content for their comments to be made publicly available are listed in Annex 4. Copies of these responses were sent to Magnox Electric, and copies can be inspected at HSE's Library and Information Centres (see Annex 2).

Public consultation on the further information

28. HSE was of the opinion that further information was necessary before it could make its decision. HSE wrote to Magnox Electric in March 2003 to request

further information on a range of topics. A copy of this letter is appended as Annex 5. Magnox Electric's response was received in July 2003. HSE consulted the same bodies and organisations on the further information that were involved in the consultations on the scoping report and environmental statement, and Magnox Electric publicised the further consultation in the same newspapers as before to involve local people. Copies of the further information were made available for public inspection at the same locations that had been used for the environmental statement.

29. The public consultation period ended in August 2003. The consultees who responded and were content for their comments to be made publicly available are listed in Annex 6. Copies of these responses were sent to Magnox Electric, and copies can be inspected at HSE's Library and Information Centres (see Annex 2).
30. Copies of the environmental statement, further information and responses to both consultations, will be available for public inspection at HSE's Library and Information Centres (see Annex 2) for a period of 1 year from the date of the Consent that was granted by HSE (that is, until December 2004).

Organisations involved in the consultation process

31. HSE considered the environmental statement and further information for Bradwell Power Station. HSE's consideration included holding discussions with Bradwell Power Station's site inspectors (from HSE (HM Nuclear Installations Inspectorate - NII) and EA), local planning authorities and independent consultants contracted to HSE, as well as taking into account written comments received during the public consultations.
32. The organisations and agencies with expertise in planning and environmental matters (the consultation bodies) assessed the environmental statement as appropriate, and HSE took account of the findings of their assessments.
33. HSE also took account of the views of the other organisations it consulted and which provided comments (see Annexes 4 and 6). These organisations had expertise, knowledge or interest in nuclear, planning and environmental matters, and included: Government departments, agencies and bodies (such as the Department of Trade and Industry (DTI), FSA and National Radiological Protection Board); national organisations (such as the Nuclear Free Local Authorities and Greenpeace); and local groups (such as the LCLC and Mersea Objectors).

Topics raised by consultees on the environmental statement – an overview

34. Some consultees provided comments on topics that were relevant to the environmental impact assessment process under EIADR99 and that were not adequately addressed in the environmental statement. These topics were pursued through HSE's request for further information.
35. Some consultees also provided comments on topics that were relevant to the decommissioning process but which did not necessarily require detailed consideration under the environmental impact assessment process under EIADR99. For example, some topics were covered by related health, safety and environment legislation where compliance with that legislation would ensure that environmental impacts would be minimal. These topics were not pursued for the purposes of further information.

36. Some of the responses contained information that was of importance or interest to other organisations, and these responses were copied to those organisations for information (where consultees were content for their comments to be made publicly available).

Request for further information – including topics raised by consultees

37. HSE requested further information on a number of topics. Some of these topics were raised by some of the consultees. All of these topics had been dealt with to some degree in the environmental statement, but HSE's view was that some had not been covered in sufficient detail, some lacked clarity, and some presented typographical errors. Some of the topics had been dealt with in greater detail at public meetings near the site, but such levels of detail had not been presented in the environmental statement which was available to everyone.
38. HSE's key concerns were secondary developments and treatment of wastes, the latter topic also being raised by a number of consultees. In both cases the topics were touched upon, but a clear picture did not emerge of the extent of the temporary building programme necessary for the decommissioning project to proceed, or the arrangements to manage and dispose of wastes. Secondary effects and treatment of wastes had been explicitly required in HSE's pre-application opinion.
39. Other areas of concern were the depth to which environmental impacts had been taken into account in the process to identify the preferred safestore strategy and transport option, and these topics were also raised by a number of consultees. These topics had been dealt with in considerable detail, but HSE's view was that the information presented did not get to the nub of the matter. Again, both of these topics had been explicitly required in HSE's pre-application opinion.
40. The environmental statement covered ecological action plans, designations and surveys for areas around Bradwell Power Station, but there were some ambiguities relating to these. In addition, it was not always clear how criteria for assessing the significance of ecological impacts were reached. The ecological effects on wildlife described in the environmental statement did not always fully address some of the key issues.
41. Measures to prevent, reduce and offset adverse environmental effects were explained throughout the environmental statement, but in some areas it was not possible to identify these in advance. This was particularly relevant to measures to protect wildlife throughout the project since the measures necessary at any particular time would depend on the wildlife present at that time, and it is not possible to predict this with certainty. HSE considered, therefore, that further information was required on the arrangements to identify the need for particular measures to protect wildlife at particular times, and how the effectiveness of these measures would be monitored and revised if necessary. Some consultees also raised this topic.
42. The environmental statement discussed dismantlement of the barrier wall. However, there were some ambiguities relating to the method of removal and effects on hydrography, navigation and leisure boat activity.

43. Transport of materials to and waste from the power station were covered in the environmental statement, however, in HSE's opinion, some of the decisions regarding specific modes of transport were not fully explained.
44. The other topics where further information was requested were to cover shortfalls in detail and clarification of ambiguities. These topics were raised by one or more consultees
45. Full details of the request for further information are included in HSE's letter to Magnox Electric that is appended as Annex 5. A brief explanation of why HSE considered that this further information was necessary is provided in Annex 7.

Topics not pursued for further information – topics raised by consultees

46. Consultees raised a number of topics that were relevant to the decommissioning process but which did not necessarily require detailed consideration under the environmental impact assessment process under EIADR99. Consultees also raised a number of topics that HSE considered had been dealt with reasonably in the environmental statement, given the timescale of the project and the uncertainties which the future must necessarily hold. HSE decided not to pursue such topics for the purposes of further information, and an overview of the main topics raised is given below (see paragraphs 47 to 54).
47. An area of concern for some consultees was the timetable for decommissioning, where they expressed the view that site clearance should be undertaken much earlier. The environmental statement presented options for decommissioning timetables and described the option selected. The environmental impacts considered did not change the overall outcome of the option selection process. In addition, decommissioning timetables are closely linked with Government policy which is under review (see paragraphs 78 to 87). It is for these reasons that the timetable for decommissioning was not pursued for the purposes of further information.
48. A number of consultees commented on the proposal for an intermediate level waste (ILW) store. This was clearly outlined in the environmental statement, and the store will be considered by the local planning authorities under the Town and Country Planning Act 1990 (TCPA90) in due course.
49. An area of concern for a number of consultees was the integrity of the safestore and flood defences over the period of 100 years. The environmental statement described the information and guidance on climate change that had been considered in the assessment. Safety of the safestore will be enforced under NIA65, where integrity of flood defences will be considered as a potential external hazard during design and periodic safety reviews. This type of review of external hazards has been ongoing since the station was built, and will continue throughout the decommissioning process. The DEFRA consultation on the proposed Weymarks wetland restoration project has been noted. However, at this time the future of this project at Bradwell-on-Sea and potential effects on the decommissioning project are far from certain. If it becomes clear over time that changes in external hazards or developments such as the Weymarks project may necessitate a change in the decommissioning project, and if that change may have significant adverse environmental effects, then Magnox Electric may need to undertake a further environmental impact assessment on that change. In such circumstances,

Magnox Electric would have to apply for consent to carry out that change to the decommissioning project, and prepare an environmental statement on that change for public consultation under EIADR99.

50. Another area of concern was what would happen if no national repository became available in the future. If this were the case, there would be a change or extension to the decommissioning project. If this may have significant adverse environmental effects, then Magnox Electric may need to undertake an environmental impact assessment and apply for consent to carry out that change or extension under EIADR99.
51. Some consultees raised concerns on contaminated ground. The environmental statement explained that the extent and nature of radioactive contaminated ground was being assessed, and presented a range of options for its long-term management strategy. The chosen option will be regulated under NIA65 and RSA93 and enforced by HSE and EA, respectively. The environmental statement explained that a programme to identify the extent and nature of non-radioactive contaminated land would be undertaken as demolition work allowed access to potentially contaminated areas. Sampling programmes had not yet been identified, but these would be undertaken in consultation with HSE and EA. This approach to deal with as yet unidentified contamination is reasonable.
52. A number of consultees expressed concern over arrangements for security during the decommissioning project and the possibility of terrorist acts targeted at the site. Terrorism is the responsibility of the Office of Civil Nuclear Security in DTI and the 2-mile air exclusion zone around the site is the responsibility of the Civil Aviation Authority (CAA). NIA65 covers other possible incidents and accidents and associated emergency arrangements, including evacuation.
53. The other main topics raised by consultees had, in HSE's view, either been adequately covered in the environmental statement, or would be adequately regulated and enforced under town and country planning legislation or related health, safety and environment legislation, such that environmental impacts would be minimal.
54. A summary of the key topics raised by consultees which were relevant to the decommissioning process but which were not pursued for the purposes of further information are listed in Annex 8 with a brief explanation of why HSE took this view.

Topics raised by consultees on the further information – an overview

55. A number of consultees expressed concerns over detailed proposals for tree planting around the Bradwell site provided to them by the licensee (though these were not included in the environmental statement or further information). The main concern was that the proposed trees would be out of character with the natural landscape character of the area. Magnox Electric has agreed to amend plans for planting in light of the concerns raised. The revised planting scheme will be included in the environmental statement that is to be prepared by Magnox Electric to accompany the planning application for the ILW store under TCPR99. The application will be made to the local planning authority and the environmental statement will be subject to public consultation.

56. Some consultees were concerned about the proposed method of removal of the barrier wall (including the associated tunnels) described within the further information: Magnox Electric undertook further discussion with these consultees and consensus was reached regarding future consultation on this issue with relevant parties. Prior to work commencing, Magnox Electric will obtain the appropriate licences, approvals and notices from the Marine Consents and Environment Unit (MCEU). The work will be undertaken in compliance with the requirements of, Coast Protection Act 1949 and the Water Resources Act 1999.
57. Some topics that had already been raised in the consultation on the environmental statement which were relevant to the decommissioning process but which were not pursued for the purposes of further information were again raised in the consultation on the further information. These topics were raised in relation to the foreword to the further information, and included the integrity of flood defences (see Annex 8).
58. Other comments from consultees related to secondary developments, treatment of wastes, ecology and transport modes. In HSE's view, the further information was adequate given the uncertainties linked to the long duration of the project. HSE decided not to request further clarification on these matters. A brief explanation of why HSE took this view is provided in Annex 9.
59. The need for an enforceable mechanism to require an environmental management plan to ensure wildlife protection and conservation was also identified.

REASONS FOR GRANTING CONSENT

Decision to grant consent

60. HSE granted consent to carry out a decommissioning project at Bradwell Power Station under EIADR99 in December 2003, and attached conditions to the Consent; a copy of the Consent and conditions is appended as Annex 10.
61. HSE took relevant factors into account when reaching its decision to grant consent. In brief, these were as follows.
- a. HSE's view of the adequacy of the information provided in the environmental statement and further information.
 - b. HSE's conclusion that environmental benefits would far outweigh detriments.
 - c. HSE's acceptance of the licensee's prediction that there would be no significant effects on the environment of other countries.
 - d. HSE's recognition that some issues would be adequately covered elsewhere. These issues were: town and country planning matters; compliance with health, safety and environment legislation; and decommissioning timetables relating to government policy.

Information provided

62. In HSE's view, the environmental statement and further information together provided all the information that was reasonably required and that Magnox Electric could reasonably compile. The issues of importance in the early parts

of the project were dealt with in some detail, whereas issues of relevance to the latter parts of the project were of necessity dealt with in terms of broad outlines, and this is reasonable given the long duration of the project.

63. The environmental statement described a flexible approach to decommissioning where necessary by providing information on a range of potential approaches for a particular issue. This was to ensure that no possible useful approaches were unnecessarily foreclosed at this early stage in the decommissioning process. In such cases, “worst case” impacts were used in assessments in the knowledge that, whichever approach was adopted, any potential impacts were likely to be less than predicted.

Environmental benefits and detriments

64. In HSE’s view, the environmental statement and further information together showed that the predicted environmental benefits overall far outweighed any adverse environmental effects of the decommissioning project. The environmental statement summarised all the environmental impacts of the decommissioning project, describing their magnitude in terms of major, moderate, slight or negligible impacts, and their significance in terms of key significant, significant, not significant or uncertain. The non-technical summary of the environmental statement summarised the key significant, significant and uncertain impacts.
65. A summary of the benefits and detriments of the environmental impacts identified by Magnox Electric is given in Annex 11. There was only one area (socio-economic factors) where key significant adverse impacts were identified. Of these, two were long-term irreversible environmental effects with major impacts and related to reduction in employment opportunities after decommissioning had been completed.
66. There were six areas where significant adverse impacts were identified. These were socio-economic factors, landscape and visual, ecology, traffic and transport, noise and vibration and air quality and climatic factors. These effects varied in magnitude and duration, the only long-term irreversible effects being associated with socio-economic factors (one having major impact and two minor impacts and relating to reduction in employment opportunities once the decommissioning work is complete). All but 2 of the 13 adverse effects for traffic and transport were due at least in part, to predicted general traffic growth which is expected to mask the actual reduction in traffic associated with the power station during and after the decommissioning project.
67. Long-term impacts relating to landscape, ecology and surface water quality and drainage were mainly beneficial. Impacts relating to geology, hydrogeology and soils, were insignificant and the scoping exercise indicated that the potential for archaeological remains on site is negligible and thus a full assessment of impacts was not required.

Effects on other countries

68. The environmental statement predicted that the only areas that may have adverse environmental impacts of international geographical levels of importance were ecology and air quality and climatic factors. Only two of these impacts (for ecology) were assessed as being significant and both of

these were identified as short-term duration, slight in magnitude and reversible. They relate to the temporary disturbance of wintering birds feeding in the immediate vicinity of the power station caused by periodic high noise and visual impact events during construction and demolition work in the autumn and winter months (works and site clearance phases of the decommissioning project). Based upon the information provided in the environmental statement, HSE is of the opinion that the assessed impacts of the project would not be likely to have significant effects on the environment in another EEA State.

Issues covered elsewhere – town and country planning

69. The environmental statement and further information together described the proposals for an ILW store and other temporary buildings on the site, and these will be regulated under TCPA90 and enforced by the relevant local planning authorities. HSE will be consulted on applications for planning permissions by the relevant local planning authorities. Where these involve environmental impact assessment (under TCPR99), the public will also be consulted before any decision is made.
70. The proposal for the ILW store will almost certainly require environmental impact assessment under TCPR99. Temporary installations to process radioactive waste might also require environmental impact assessment under TCPR99 if they fulfill the criteria in Schedule 2 (that is, if building footprints exceed a specified area, or if the need for a new or a change to an existing authorisation under RSA93 is identified).
71. Another area where permissions may be necessary is for any in-fill materials that are used and have to be brought onto the site. This will be regulated under TCPA90 and associated legislation and enforced by the relevant local planning authorities.
72. It follows, therefore, that Magnox Electric can begin work on all parts of the decommissioning project so long as the work undertaken does not require additional permissions under town and country planning legislation.
73. HSE and the local planning authorities have had and will continue to have discussions on the interface between EIADR99, NIA65, TCPR99 and other town and country planning legislation, as necessary.

Issues covered elsewhere – health, safety and environment legislation

74. The environmental statement and further information together described links to related health, safety and environment legislation. This included legislation covering: occupational health and safety; nuclear safety; radioactive contamination and discharges; and treatment of non-radioactive contamination and wastes (involving materials such as asbestos).
75. HSE is satisfied that control of such health, safety and environment matters can be achieved through regulation and enforcement, where compliance with relevant legislation would ensure that adverse environmental impacts would be minimal. The majority of the legislation is enforced by HSE and EA, and there are administrative arrangements in place between HSE and EA on working together on matters of mutual interest (see paragraphs 12 and 13).

76. It follows, therefore, that Magnox Electric can begin work on all parts of the decommissioning project so long as the work undertaken does not require additional permissions under related health, safety and environment legislation.

77. HSE and EA have had and will continue to have discussions on the interface between EIA, NIA65, RSA93 and other health, safety and environment legislation, as necessary.

Issues covered elsewhere – decommissioning timetables

Current Government policy

78. The current Government policy on decommissioning UK's nuclear facilities is summarised in paragraphs 181 to 184 of the White Paper "Review of Radioactive Waste Management Policy: Final Conclusions" (Cm2919, published in July 1995). The document states that decommissioning should be undertaken as soon as is reasonably practicable, taking account of all relevant factors. All nuclear operators should draw up strategies for decommissioning redundant plant and include justification of the timetables proposed. The safestore strategy was considered to be potentially feasible and acceptable.

Review of Government policy

79. Government policy on radioactive waste has recently been reviewed. A Consultation Paper, "Managing Radioactive Waste Safely", was published in September 2001. The responses to the consultation were published in July 2002 in "Managing Radioactive Waste Safely - Summary of Responses to the Consultation September 2001 – March 2002". The document also acknowledged the need to review the current Government policy on decommissioning.

80. Following the review, a Government White Paper, "Managing the Nuclear Legacy – A Strategy for Action" (Cm 5552), was published in July 2002 that gave details on the Government's plans to set up a Nuclear Decommissioning Authority (NDA) – formerly known as the Liabilities Management Authority (LMA) - to take responsibility for the liabilities arising from past and future government civil nuclear programmes. The future NDA will be responsible for setting agreed decommissioning timetables for these programmes (in consultation with both the regulators and the licensees), and ensuring that the licensees carry out programmes effectively. In November 2003, the government published a consultation document on nuclear decommissioning policy. Magnox Electric plc will need to consider whether any revisions to the policy resulting from the consultation are likely to affect the decommissioning strategy for Bradwell. If this is the case, Magnox might need to undertake a new environmental impact assessment and submit a revised ES to HSE.

European Commission initiatives

81. Council Directive 2001/42/EC on the assessment of the effects of certain plans and programmes on the environment (known as the Strategic Environmental Assessment (SEA) Directive) must be implemented by 2004. The purposes of the SEA and EIA Directives are related in that both deal with environmental assessment, but the SEA Directive deals with strategic plans

and programmes whereas the EIA Directive deals with specific projects (such as under EIADR99).

Quinquennial reviews (QQRs)

82. To ensure that operators' decommissioning strategies remain soundly based as circumstances change, HSE will review these strategies every 5 years (quinquennial reviews (QQRs)) in consultation with EA and SEPA, as appropriate (Cm2919).
83. Magnox Electric's decommissioning strategy was sent to HSE in April 2000, and HSE published its QQR in February 2002. In this review, NII identified issues which it considered Magnox Electric should address. These included: the principles of sustainable development; intergenerational equity; justification of the timetable proposed; why a shorter timescale for deferral is not reasonably practicable; and engaging a wide range of its external stakeholders in dialogue on each of the original decommissioning options to inform itself as to the acceptability of the scoring and weighting decisions.

Options for decommissioning timetables

84. An environmental statement under EIADR99 needs to describe the options for decommissioning, including decommissioning timetables. The primary vehicle to consider decommissioning timetables is the QQR process. EIADR99 would only play an important role if environmental impacts were affected by those timetables.
85. The environmental statement and further information together described options for decommissioning, including the safestore strategy and options for decommissioning timetables. A range of environmental impacts (including non-radioactive wastes, waste minimisation, noise, transport and visual impacts) was considered during the process to develop the decommissioning strategy. (This was a smaller range than was considered in the environmental impact assessment under EIADR99.) Consideration of the environmental impacts did not change the overall outcome of the strategy selection process.
86. The environmental statement and further information stated that the duration of the works phase, care and maintenance period, and site clearance phase, was around 10, 85 to 105, and 10 years, respectively. It is possible that the decommissioning timetable might change in the future, perhaps in response to the QQR process, implementation of the SEA Directive or activities of the future NDA. Such a change might result in, for example, a reduction in the care and maintenance period. There are no technical reasons why such a reduction could not take place since the environmental statement explained that it is technically feasible to dismantle plant, including the reactors, at any time throughout the care and maintenance period.
87. If a change to the decommissioning timetable resulted in a change to the decommissioning project which may have significant adverse environmental effects, then Magnox Electric must apply to HSE for a determination as to whether the change should be subjected to an environmental impact assessment. If so, Magnox Electric would have to apply for consent to carry out that change to the decommissioning project, and prepare an environmental statement on that change for public consultation under EIADR99.

MEASURES TO CONTROL MAJOR ADVERSE ENVIRONMENTAL EFFECTS

88. There is one area where mitigation measures may be necessary to control key significant, significant or uncertain irreversible major adverse impacts, and that is socio-economic factors. There were seven topic areas in this category that had long-term irreversible impacts relating to the time when decommissioning would be completed and the site cleared, resulting directly or indirectly to changes in station employment levels. The environmental statement explained that the changes in station employment levels cannot be prevented. The measures described in the environmental statement were that impacts on individuals would be cushioned by, for example, maximising opportunities for staff redeployment within Magnox Electric.
89. There is one area where mitigation measures may be necessary to control significant moderate-to-major adverse impacts, and that is noise and vibration. There were four topic areas in this category that had short-term impacts relating to intermittent events during demolition. The measures described in the environmental statement are outlined below.
- a. The environmental statement stated that keeping the main noise generating activities to daytime hours between 8am and 5pm was a major factor in noise control. Noise generating activities outside these hours would be with prior agreement from the relevant local planning authority.
 - b. The activities most likely to affect remote locations would be demolition work involving dropping large structural elements from great heights (this method would only to be used where this was the safest method). Prior warning would be given to local residents of such activities.
 - c. The highest levels of noise and vibration on site would be demolition work involving the breaking up of concrete ground slabs and below ground structures, and would depend on the equipment used. Wherever possible, concrete crushers that used tension rather than pneumatic hammers would be selected, and excavators would be selected with regard to their size and potential vibration impacts.
90. Mitigation measures are covered in conditions attached to the Consent that require Magnox Electric to prepare an environmental management plan (see paragraph 91).

CONDITIONS ATTACHED TO THE CONSENT

Content of the conditions

91. HSE has attached conditions to the Consent. A copy of the Consent and conditions is appended as Annex 10. In brief, Magnox Electric must prepare and implement an environmental management plan that identifies mitigation measures, describes the implementation and effectiveness of mitigation measures, and describes changes to mitigation measures and reasons for changes in light of experience. A copy of the environmental management plan and its subsequent revisions must be sent to HSE and made available to the public. HSE must also be notified in advance of any significant changes to

mitigation measures to prevent, reduce and where possible offset any major adverse effects on the environment.

92. Regulation 16 of EIADR99 provides HSE with sufficient powers under HSWA74 to effectively enforce these conditions.
93. A copy of the environmental management plan will be made available for public inspection at HSE's Library and Information Centres (see Annex 2), and the plan will be replaced by subsequent revisions as these are provided.

Reasons for the conditions

94. In order to successfully control environmental impacts, mitigation measures will be necessary in a number of areas. This is why HSE attached conditions to the Consent that cover mitigation measures.

Condition 1

95. Condition 1 requires Magnox Electric to start the decommissioning project within 5 years of consent being granted. The project is dismantling or decommissioning work on the power station to which EIADR99 relate.

Condition 2

96. Condition 2 requires Magnox Electric to prepare an environmental management plan to describe mitigation measures necessary to prevent, reduce and where possible offset any significant adverse effects on the environment. The plan must be implemented, and dismantling or decommissioning work can only be carried out in accordance with the plan.

Condition 3

97. Condition 3 requires the environmental management plan to be prepared within 90 days of the date of the Consent. The plan must cover the mitigation measures for the work activities to be carried out. There are essentially three types of work activities which are as follows.
 - a. Work activities with associated mitigation measures.
 - b. Future work activities with a range of options for implementation with associated mitigation measures.
 - c. Future work activities that have not yet been assessed for the need for mitigation measures due to future uncertainties.
98. Most of the work activities have associated mitigation measures in the environmental statement and further information, such as measures to control noise and vibration impacts during demolition. Condition 3a requires these mitigation measures to be listed in the environmental management plan.
99. Some future work activities have a range of options for implementation, such as options for the management of radioactive contaminated ground. In such cases, the options have associated mitigation measures in the environmental statement and further information, and when the option is chosen in the future, the appropriate mitigation measures should be implemented. Condition 3b requires these work activities and the options for their implementation to be listed in the environmental management plan.

100. Some future work activities can only be assessed for the need for mitigation measures to control environmental impacts during the later stages of the decommissioning project, such as impacts on wildlife during construction of temporary buildings to facilitate site clearance. In such cases, mitigation measures to protect wildlife would be dependent on the wildlife present at that future time. Condition 3c requires these work activities to be listed in environmental management plan. Although the need for mitigation measures for such work activities cannot yet be assessed, it seems likely that measures would be similar to those for similar work activities during the earlier stages of the project.

Condition 4

101. As the project progresses, condition 4 requires the environmental management plan to be updated. Where options for implementation of work activities have been selected from the list of work activities and options compiled under condition 3b, condition 4a requires these selected options and associated mitigation measures to be included in the plan, along with reasons for their selection.

102. Where the need for mitigation measures to control environmental impacts during the later stages of the decommissioning project have been assessed from the list of work activities compiled under condition 3c, condition 4b requires these mitigation measures to be included in the environmental management plan, along with reasons for their selection.

103. Condition 4c requires the environmental management plan to describe the effectiveness of mitigation measures over time. Condition 4d requires the plan to describe significant changes to mitigation measures in light of experience, along with reasons for those changes. The plan will be, therefore, a living document that will be periodically reviewed and revised throughout the whole of the decommissioning project.

Condition 5

104. Condition 5 requires Magnox Electric to send the environmental management plan and its subsequent revisions to HSE periodically. The timeframe for sending the plan to HSE is on an annual basis, or such longer period of time as HSE may agree. In the first part of the works phase it is likely that this timetable will be followed, but as experience is gained and effectiveness of mitigation measures demonstrated, the period of time between subsequent documents may well increase. During the care and maintenance period, this period of time is likely to be much longer, perhaps every 5 to 10 years, with the possible exception of the time during which the waste is removed from the ILW store and sent off site for disposal. Timeframes for the site clearance phase are likely to be similar to those for the works phase.

105. Condition 5 also requires Magnox Electric to make copies of the environmental management plan available to the public. This is to keep the local population informed on progress with mitigation measures.

Condition 6

106. Condition 6 requires Magnox Electric to give HSE advance warning of any significant changes to mitigation measures to control major adverse effects on

the environment. Although few such effects were described in the environmental statement and further information, mitigation measures might not work as predicted, and changes to mitigation measures might become necessary to control major adverse environmental effects in the future.

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GLOSSARY OF TERMS AND ABBREVIATIONS

BPEO	Best Practicable Environmental Option
CAA	Civil Aviation Authority
DTI	Department of Trade and Industry
EA	Environment Agency
EEA	European Economic Area
EIA	Environmental Impact Assessment
EIADR99	Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999
Euratom Treaty	Treaty establishing the European Atomic Energy Community
FSA	Food Standards Agency
HSE	Health and Safety Executive
HSWA74	Health and Safety at Work etc Act 1974
ILW	Intermediate level waste – waste with radioactivity levels exceeding the upper boundaries for low level waste (waste containing radioactive materials other than those acceptable for disposal with ordinary refuse, but not exceeding 4GBq/te of alpha or 12GBq/te of beta/gamma activity), but which does not require heating to be taken into account in the design of storage or disposal facilities
IRR99	Ionising Radiations Regulations 1999
LCLC	Local Community Liaison Committee
Licensee	Holder of a nuclear site license
LMA	Liabilities Management Authority – now known as the NDA (Nuclear Decommissioning Authority)
MADA	Multi-Attribute Decision Analysis
Magnox Electric	Magnox Electric plc
NDA	Nuclear Decommissioning Authority – formerly known as the LMA (Liabilities Management Authority) – referred to in the Government White Paper, “Managing the Nuclear Legacy – A Strategy for Action” (Cm 5552, published July 2002)
NIA65	Nuclear Installations Act 1965, as amended
NII	Her Majesty’s Nuclear Installations Inspectorate – part of HSE

QQR	Quinquennial review – reviews of nuclear operators’ decommissioning strategies carried out every 5 years by HSE (NII) in consultation with EA and SEPA, as appropriate – referred to in the Government White Paper, “Review of Radioactive Waste Management Policy: Final Conclusions” (Cm 2919, published July 1995)
REPPIR	Radiation (Emergency Preparedness and Public Information) Regulations 2001
RSA93	Radioactive Substances Act 1993
Safestore	Preservation of reactor buildings, their contents, and other structures on the site to facilitate an extended delay period before dismantling
SEA	Strategic Environmental Assessment
SEPA	Scottish Environment Protection Agency
TCPA90	Town and Country Planning Act 1990
TCPR99	Town and Country Planning (Environmental Impact Assessment for Decommissioning) (England and Wales) Regulations 1999

Annex 1

NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR DECOMMISSIONING) REGULATIONS 1999

The Executive's pre-application opinion as to the content of the environmental statement for Bradwell Nuclear Power Station

Issue

- 1) To state the Executive's pre-application opinion as to the content of the environmental statement for Bradwell Nuclear Power Station under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (EIADR).

Background

- 2) EIADR implements the requirement for an environmental impact assessment for decommissioning nuclear power stations and nuclear reactors arising from Council Directive 85/337/EEC (as amended by Council Directive 97/11/EC) on the assessment of the effects of certain public and private projects on the environment.
- 3) Before decommissioning or dismantling of a nuclear reactor or power station can take place, a licensee must apply to the Health and Safety Executive (HSE) for consent (referred to as the Executive in EIADR), undertake an environmental impact assessment and provide an environmental statement. The information to be included in an environmental statement is referred to and specified in Schedule 1 to EIADR.
- 4) The nuclear site licensee, Magnox Electric plc (wholly owned subsidiary of British Nuclear Fuels plc, BNFL), has asked HSE to provide a pre-application opinion under regulation 6 of EIADR as to the content of the environmental statement for Bradwell Nuclear Power Station. This is an optional precursor to the licensee providing an environmental statement under regulation 5 of EIADR.
- 5) The licensee has provided a scoping report to inform the pre-application opinion entitled "Bradwell Nuclear Power Station Environmental Statement: Scoping Report". The scoping report identifies a range of issues and considers these in the context of the proposed scope of the environmental statement.

- 6) There are no precedents for forming pre-application opinions as to the content of the environmental statement under EIADR, although BNFL has asked HSE to provide a pre-application opinion on the content of the environmental statement for Hinkley Point A Nuclear Power Station; this is being dealt with in parallel to the opinion for Bradwell. The procedure for a pre-application opinion is similar, however, to the scoping opinion provided by the local authority under regulation 10 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.
- 7) The environmental statement for Bradwell Nuclear Power Station, when submitted to HSE, should address all the information specified in Schedule 1 to EIADR. If, on receiving the information and in HSE's opinion such information is not sufficient, then EIADR gives HSE the power to require the licensee to provide further information.

Consultation

- 8) HSE has consulted the consultation bodies specified in regulation 2 of EIADR on the scoping report provided by BNFL. In addition, HSE has consulted other bodies it considered appropriate, other bodies nominated by consultees, and other persons who asked to be involved in the consultation process. HSE requested consultees with detailed local knowledge and experience located near to the station to include matters of local concern. The list of consultees is at Appendix 1. All statutory consultees and some non-statutory consultees responded to the consultation process.
- 9) Consultees were generally content with the breadth of the proposed scope and provided detailed points on the issues presented by the licensee. A number of other issues not explicit within the proposed scope were also highlighted by consultees for consideration.
- 10) The responses received by HSE have been considered and incorporated, as appropriate, into HSE's opinion. Responses have been copied in full to BNFL only with the agreement of consultees.

HSE's opinion as to the content of the environmental statement

Proposed scope

- 11) The licensee's scoping report provides an overview of the issues to be addressed in the environmental statement:
 - a) Noise;

- b) Vibration;
- c) Air quality and climatic factors;
- d) Geology, hydrogeology and soils;
- e) Surface water quality and drainage;
- f) Ecology;
- g) Traffic and transport;
- h) Landscape and visual;
- i) Socio-economic.

12) Whilst it is acknowledged that the scoping report does not, nor should not, consider issues in great detail, it is not entirely clear that all the matters in Schedule 1 to EIADR will be addressed adequately in the environmental statement.

13) HSE recognises that the scoping report covers most of the aspects required. A number of aspects, however, that should be considered in the environmental statement were not explicitly described, although they may have been implicit within the scoping report. These relate in particular to information referred to and specified in EIADR, Schedule 1, paragraphs 2 (and 11), 4 and 5 (and 9).

14) If the licensee has considered an issue and considers that adverse environmental impacts are minimal, then this should be explained and justified in the environmental statement rather than the issue being omitted from the statement.

Issues not explicitly described within the scoping report – to be included in the environmental statement

15) In HSE's opinion, a number of issues were not explicitly described within the scoping report, which should be included in the environmental statement (see paragraph 13 above). These issues are listed at Appendix 2.

Detailed points on issues within the scoping report – to be addressed in the environmental statement

16) In HSE's opinion, the licensee should address certain detailed points on the issues within the scoping report in the environmental statement itself. These points are listed at Appendix 3.

Points on other matters – whose consideration could be of benefit to the environmental statement

17) A number of other points are listed at Appendix 4. HSE suggests that, although not specifically required, their consideration could be of benefit to the environmental statement.

Presentation

18) This opinion will be copied for information to all consultees listed at Appendix 1.

Implications

19) The licensee may wish to provide flexibility within the environmental statement to deal with future operational or other changes which may be reasonably anticipated at the time of application for consent.

20) HSE will consult on the environmental statement for Bradwell Nuclear Power Station when this is provided by the licensee in due course under EIADR.

Contact

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APPENDIX 1

TABLE 1

**BRADWELL NUCLEAR POWER STATION
STATUTORY RESPONDENTS FOR EIADR 99**

	Organisation	Contact
1	Chelmsford Borough Council	Mr C Hollyman, Head of Town Planning Services
2	Countryside Agency	Mr D Vose, Senior Countryside Officer
3	English Nature	Dr Alastair Burn
4	Environment Agency	Mr D Bennett
5	Essex County Council	Mr P Hakes
6	Maldon District Council	Linda Weeks
7	Tendring District Council	Mr P Green, Principal Planning Officer
8	West Mersea Town Council	Mr Tucker, Town Clerk

TABLE 2

**BRADWELL NUCLEAR POWER STATION - OTHER RESPONDENTS FOR
EIADR 99**

	Organisation	Contact
1	Bradwell on Sea Parish Council	Mr B G Main, Chairman
2	Colchester Borough Council & Colchester Port Authority	Colin Daines, Environmental Control Manager
3	East of England Tourist Board	Mr N J Warren, Planning Officer
4	English Heritage	Ms D Priddy
5	Essex Police	Mr K Ferguson, Contingency Planning Manager
6	Kent & Essex Sea Fisheries Committee	Mr J Wiggins, Chief Fisheries Officer
7	National Radiological Protection Board	Dr J R Cooper, Head of Environmental Assessment Department
8	National Trust	Keith Turner, Area Manager
9	Royal Yachting Association	Mr J M Eardley
10	Rural Community Council for Essex	Mrs Stakey
11	Southend on Sea Borough Council	John Collins, Technical Services Dept
12	Food Standards Agency	S W Conney, Radiological Safety Unit
13	UK Nuclear Free Local Authorities	J K Woolley
14	Shut down Bradwell Campaign	Val Mainwood
15	Department of Environment, Transport and the Regions	Mr B Oliver
16	Mersea Objectors	Mrs B Teague
17	Colchester Borough Council	J Bouckley (LCLC)
18	Farmers Union	Mrs G Ashford (LCLC)
19	Department of Trade and Industry	Mr J Hoare

**ISSUES NOT EXPLICITLY DESCRIBED WITHIN THE SCOPING REPORT – TO
BE INCLUDED IN THE ENVIRONMENTAL STATEMENT**

Options and reasons for option chosen

- 1) EIADR requires that the environmental statement must include an outline of the main alternatives (or options) studied by the licensee, and an indication of the main reasons for the option chosen, taking into account the environmental effects (EIADR, Schedule 1, paragraphs 2 and 11). This means the statement should address options for the whole project, including:
 - a) The works phase;
 - b) The care and maintenance phase;
 - c) The site clearance phase;
 - d) Transport;
 - e) Treatment of wastes.

Description of likely effects on the environment

- 2) EIADR requires that the environmental statement should describe the likely effects of the proposed project on the environment, which should cover indirect, secondary, cumulative, short-, medium- and long-term, permanent and temporary, and positive and negative effects of the project on the environment (EIADR, Schedule 1, paragraph 4).
- 3) This means that the statement must cover the whole project through dismantling to site clearance, and address, amongst other things, accidental or untoward events. Furthermore, the nature and potential for adverse environmental effects arising from possible abnormal situations during the whole decommissioning period should be identified. While it may not be possible, at this stage, to be definitive about the later stages of decommissioning, the statement should cover the strategic intention for eventual completion of decommissioning and as much

detail as possible on environmental effects. Where there is uncertainty in later stages this must be indicated. Some more detailed aspects are described below.

Measures to control effects on the environment

- 4) The environmental statement must describe measures envisaged to avoid, reduce and, if possible, remedy significant adverse effects on the environment (EIADR, Schedule 1, paragraphs 5 and 9).

Radioactive emissions and wastes

- 5) The environmental statement should consider potential radioactive emissions and long-term storage of radioactive waste on the site (N.B. authorised discharges will continue to be made under the Radioactive Substances Act 1993). Other wastes should also be addressed, including asbestos, and other hazardous and non-hazardous wastes (EIADR, Schedule 1, paragraph 1).

APPENDIX 3

DETAILED POINTS ON ISSUES WITHIN THE SCOPING REPORT – TO BE ADDRESSED IN THE ENVIRONMENTAL STATEMENT

- 1) The licensee should consider the detailed points listed below on the issues within the scoping report. Most of these detailed points are not explicitly described but may be mentioned within the scoping report.

Noise

- 2) Consideration should be given to:
 - a) Any potential effects on wildlife, particularly waterfowl, on adjacent land and within the estuary (N.B. The scoping report identifies potential impacts on wintering birds due to noise);
 - b) Broader impacts of noise, not just noise within the immediate locality, including beyond public rights of way and movement along all transportation routes;
 - c) Impacts from any potential blasting operations.

Vibration

- 3) Consideration should be given to:
 - a) Broader impacts of vibration, not just vibration within the immediate locality;
 - b) Impacts from any potential blasting operations.

Air quality and climatic factors

- 4) Consideration should be given to:

- a) Extending the assessment beyond the 2 km zone around the site boundary, including nearby places such as Mersea Island, beyond public rights of way, and covering transportation of waste materials further afield (N.B. The scoping report considers the potential impact of emissions on air quality up to 2km beyond the site boundary);
 - b) Extending the potential impact of emissions on air quality to any potential knock-on effects on, for example, water quality, or dust entering water courses or falling on vegetation;
 - c) Impacts from potential changes in the use of incineration on air quality.
- 5) Concern was expressed regarding the impact of potential climatic changes over the proposed 100 years. Consideration should be given to:
- a) The ability of buildings and structures designed for the British climate to withstand climate changes;
 - b) The ability of the drainage system to cope with the consequences of climate changes;
 - c) Potential effects of climate change, including changes in sea level, on the integrity and safety of the site (N.B. The scoping report covers the possible rise in sea level and other climatic changes in relation to the integrity of the flood defences for the site).

Geology, hydrogeology and soils

- 6) Consideration should be given to:
- a) Impacts of long-term geological, hydrological and seismic factors on public health and safety and the environment;
 - b) Impacts on groundwater from potential contamination.

Surface water quality and drainage

- 7) Consideration should be given to:

- a) Addressing saltwater and freshwater separately;
- b) Explaining potential impacts from removal of chemicals and oils on surface freshwater;
- c) Impacts from water abstraction, including thermal changes on fish stocks (for example, the bass nursery area, local bass population and Blackwater herring) and oyster fishing (for example, in the Blackwater estuary and nearby creeks) (N.B. The scoping report states that the environmental statement will take account of the cessation of cooling water discharge);
- d) Remaining underwater structures which could cause obstruction to vessels trawling or drift netting;
- e) Impacts on hydrology and sediment transport or deposition following removal of the breakwater;
- f) Impacts on flood defences, including flood protection and flood plain;
- g) Using groundwater vulnerability maps as a reference source.

Ecology

- 8) Reference should be made to any ecological studies planned, bearing in mind the seasonal nature of wildlife. In particular, consideration should be given to:
 - a) Referencing the document entitled, “Essex Estuaries European marine site - English Nature’s advice given under regulation 33(2) of the Conservation (Natural Habitats &c.) Regulations 1994”, issued on 14 June 2000, particularly with regard to Special Areas of Conservation (SACs) and Special Protection Areas (SPAs) (N.B. The scoping report refers to the Essex Estuaries SAC and Mid Essex Coast SPA);
 - b) Local and regional designated habitats up to 5km beyond the site boundary (N.B. The scoping report considers the potential impact on national and international habitats);
 - c) Potential impacts on habitat and species distribution of fish in relation to thermal changes following cessation of cooling water discharge (see the section on surface water quality and drainage);

- d) Potential impacts on wildlife from lighting associated with changes in night working;
- e) Ecological implications from heavy traffic movements through the Dengie landscape, both on site and off site.

Traffic and transport

9) Many views were expressed on traffic and transport. The scoping report only covers road transport, and the potential use of transport by rail or sea should be addressed. The key points are summarised below.

10) Further consideration should be given to road transport, including:

- a) Impacts on all likely road traffic routes (N.B. The scoping report refers to the principal traffic route);
- b) Potential disruption to the local population from potential increases in heavy goods road traffic, including noise, vibration, exhaust emissions and damage to road surfaces;
- c) Potential impacts from large, heavy indivisible loads of inbound plant and outbound scrap or waste;
- d) Potential impacts on local traffic from changes in the labour force (in particular, whether new recruits are drawn from the catchment area or from outside, the latter possibly in temporary accommodation on or near the site).

11) Consideration should be given to rail transport, including:

- a) Potential impacts of continuing to use the railhead at Southminster (or proposals to use an alternative railhead);
- b) Potential volumes of plant and scrap or waste;
- c) Impacts on other rail users.

12) Consideration should be given to water transport, including:

- a) Potential effects on wildlife and fouling of the seabed;

- b) Impacts of the removal of the breakwater on water navigation.

Landscape and visual

13) Consideration should be given to:

- a) Impacts on the Greater Thames Estuary and London Basin Natural Areas produced by English Nature;
- b) Changes in light pollution from changes in night working;
- c) Arrangements for the removal of power lines and associated infrastructure;
- d) Impacts of changing the visual effects of the station on water navigation (the power station building is a conspicuous structure which is used as a navigational aid in local waters).

Socio-economic

14) Many views on socio-economic matters were expressed. A number of concerns were expressed regarding impact on employment, local businesses, housing markets and tourism, which are identified in the scoping report. Other points raised are summarised below.

15) Consideration should be given to:

- a) Broader impacts on socio-economic matters, including rural communities, jobs and businesses, and not just impacts within the immediate locality;
- b) Implications for recreation;
- c) Potential impacts on a sustainable public transport system, affecting tourism and the ability of commuters to retain employment outside the area;
- d) Managing perceptions of the wider community impacting on local economies, such as potential falls in fish and shellfish sales.

Archaeology and cultural heritage

- 16) The scoping report states that an independent study concluded that there is no evidence that there have been any features of archaeological interest within the licensed site, and that no further assessments with respect to below ground archaeology are proposed. This should be addressed in the environmental statement.

POINTS ON OTHER MATTERS – WHOSE CONSIDERATION COULD BE OF BENEFIT TO THE ENVIRONMENTAL STATEMENT

- 1) The licensee may wish to take into account the points listed below in the environmental statement, although these are not explicitly required in the statement.

- 2) Consideration may be given to:
 - a) Including in the policy framework any relevant central government policy (N.B. The scoping report refers to regional and local plans and guidance in the policy framework for the environmental statement);

 - b) Explaining the role of the environmental impact assessment and environmental statement within the framework of the licensing regime and review of decommissioning strategy requested by government;

 - c) Providing a summary matrix of the different activities associated with the proposed work and the range of environmental parameters potentially affected, with some form of ranking of the potential significance of any impact;

 - d) Including strategies for monitoring the actual impacts of measures to be taken to avoid, reduce and, if possible, remedy significant adverse effects on the environment. This could cover gathering base-line data, and monitoring during the works and care and maintenance phases to demonstrate the effectiveness of the measures taken or to identify the need for measures to be reviewed and amended. Monitoring could include potential health effects on the local population;

 - e) Using the proposed 100 year delay before site clearance begins to provide an opportunity to create a nature reserve within part of the site boundary which would be undisturbed by human intervention. Species of flora, and possibly fauna, could be introduced which would be endangered in more accessible locations;

 - f) Using appropriate waste materials to fortify sea defences;

 - g) Involving the local population in the decommissioning programme, in particular, discussing concerns and expectations, and involving local

government in discussions on changes in land use and asset disposal arrangements (for example, the airfield, waterside, and areas of Downhall beach) with a view to benefiting the community (as with the lake projects at Trawsfynydd).

- 3) A number of issues are covered by existing legislation, and these will continue to be enforced under this legislation. These issues include:
 - a) Continuity of site management;
 - b) Site security, including human and animal intrusion;
 - c) Fire safety, including safety of additional contractors housed in temporary accommodation, procedures for dealing with incidents involving hazardous materials, and liaison with the local fire service;
 - d) Emergency arrangements;
 - e) Safety of plant, including reactor dismantlement;
 - f) Transport safety, including identifying standard road routes (with implications for congestion of narrow lanes), and dealing with incidents involving vehicle fires and leakage of hazardous material;
 - g) Health and safety aspects of dust control from, for example, masonry crushing on the site.

ANNEX 2 HSE Library and Information Centres

Health and Safety Executive
Magdalen Information Centre
Magdalen House
Trinity Road
Bootle
L20 3QZ

Telephone: 0151 951 4000

Health and Safety Executive
Rose Court Information Centre
Rose Court
Southwark Bridge
London SE1 9HS

Telephone: 020 7717 6000

Health and Safety Executive
Sheffield Information Centre
Broad Lane
Sheffield
S3 7HQ

Telephone: 01142 892000

Health and Safety Executive
Library
Wren House
Hedgerows Business Park
Colchester Road
Springfield
Chelmsford
CM2 5PF

Telephone: 01142 892000

ANNEX 3 Consultees on the environmental statement

Consultation bodies

HSE consulted 18 individuals in 8 organisations

Chelmsford Borough Council

Countryside Agency

English Nature

Environment Agency

Essex County Council

Maldon District Council

Tendring District Council

West Mersea Town Council

Other organisations

HSE consulted 59 individuals in 54 organisations

Anglia Water

Blackwater Oyster Men's Association

Blackwater Project

Blackwater Protectors Group

Bradwell for Renewable Energy

Bradwell on Sea Parish Council

British Energy

Colchester Borough Council & Colchester Port Authority

Council for the Protection of Rural England

Country Land Owners Association

Crown Estates Commissioners

DEFRA

D.R.S

Department of Transport

East of England Development Agency

East of England Tourist Board

English Heritage

English Heritage
Essex Ambulance Service NHS Trust
Essex Estuary Initiative
Essex Fire & Rescue Service
Essex Oyster Co
Essex Police
Essex and Suffolk Water
Essex Wildlife Trust
E.W.S
Food Standards Agency
Friends of the Earth
Go East
Government Office East
Greenpeace
Kent & Essex Sea Fisheries Committee
Maldon District Green Party
Mersea Objectors
Ministry of Defence
National Farmers Union
National Radiological Protection Board
National Trust
North Essex Health Authority
Nuclear Free Local Authorities
ODPM
Railtrack Properties
Rochford District Council
Rochford District Council
RSPB
Royal Yachting Association
Rural Community Council of Essex
South Essex Health Authority
Southend on Sea Borough Council
Southend on Sea Borough Council
Strategic Rail Authority
Suffolk County Council
Tollesbury Parish Council
West Mersea Fishermans Association

Local Community Liaison Committee

HSE consulted 44 individuals in 28 organisations

Bradwell Nuclear Power Station

Bradwell Parish Council

Braintree District Council

BNFL Magnox Generation

Chelmsford Borough Council

Colchester Borough Council

Dengie Hundred Group of Parish Councils

Environment Agency

Essex Ambulance Service

Essex & Suffolk Water

Essex County Council

Essex County Fire & Rescue Service

Essex Farmers Union

Essex Police - Rural Team

Essex Police

Essex Rivers Health Care

Food Standards Agency

GO-East

Maldon District Council

MP Maldon & East Chelmsford

Rochford District Council

St Cedd's C of E School

St Lawrence Parish Council

Southend Borough Council

Southend-on-Sea Borough Council

Tendring District Council

Tillingham Parish Council

West Mersea Town Council

ANNEX 4 Consultees who responded on the environmental statement

HSE received 28 responses on the environmental statement from 25 organisations

Blackwater Protectors
Bradwell for Renewable Energy
Bradwell Parish Council (LCLC member)
Chelmsford Borough Council
Colchester Borough Council
Colchester Port Health Authority
Countryside Agency
East of England Development Agency
East of England Tourist Board
English Nature
Environment Agency
Essex County Council
Essex Farmers Union (LCLC member)
Essex Wildlife Trust
Food Standards Agency
Kent & Essex Sea Fisheries Committee
Maldon District Council
Maldon District Green Party
Member of the public
Mersea Objectors
Mouchel Essex (on behalf of Essex County Council)
National Radiological Protection Board
Nuclear Free Local Authorities
Rochford District Council
Royal Yachting Association
Southend-on-Sea Borough Council

ANNEX 5 Letter requesting further information on the environmental statement

Mr A J Shuttleworth
The Company Secretary
Magnox Electric Plc
Risley
Warrington
Cheshire
WA3 6AS

Your Ref: BWA 51073
PJGW/SH/mjw
File Ref NUC 157/8/2 P1E1
Unique N° BWA70644R

31 March 2003

Dear Mr Shuttleworth

MAGNOX ELECTRIC PLC, BRADWELL POWER STATION

NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR DECOMMISSIONING) REGULATIONS 1999

REQUEST FOR FURTHER INFORMATION UNDER REGULATION 10

I refer to the letter from Mr Wright dated 8 April 2002, applying for consent to carry out a decommissioning project at Bradwell Power Station under regulation 4(a) and submitting an environmental statement under regulation 5 of the above Regulations, and my response dated 18 April 2002. Subsequently, a public consultation was undertaken in accordance with the Regulations.

From its consideration of the comments received and other work, the Health and Safety Executive is of the opinion that the environmental statement provided by Magnox Electric plc for Bradwell Power Station under regulation 5 should contain further information, and for the purposes of the powers under regulation 10 of the above Regulations hereby requests that Magnox Electric plc provide further information as specified in the Appendix to this letter. This further information will be subject to further consultation and consideration by ourselves.

Yours sincerely

Miss F E Taylor
HM Superintending Inspector
Nuclear Installations Inspectorate

Copies:

Mr P Woolam, Head of Decommissioning Liabilities Unit
Mr P J G Wright, Station Manager, Bradwell Power Station

APPENDIX – FURTHER INFORMATION TO BE PROVIDED

- 1) **Secondary developments.** The environmental statement contains a number of references to temporary secondary developments for the processing of radioactive waste that are related to the proposal for a new intermediate level waste (ILW) store.
 - a. Further information is requested on the temporary buildings that are planned for the works phase. In particular:
 - i. Describe key changes to the buildings on site, including sufficient detail to link buildings to the processes needed to recover and treat ILW before being transferred to the ILW store.
 - ii. Indicate what consents would be required for changes to the buildings on site under other legislation.
 - iii. Indicate how any construction laydown areas relate to the existing site layout.
 - iv. Provide clarification that impacts from and mitigation for the use of cementitious materials for construction and for waste passivation have been included in the studies.
 - b. Further information is requested on temporary buildings that are likely to be required for the site clearance phase. In particular:
 - i. Indicate key changes to the buildings on site, including linking buildings to the processes needed to recover and treat intermediate level waste.
- 2) **Treatment of wastes.** The environmental statement covers potential contamination from radioactive materials.
 - a. Further information is requested on dealing with potential contamination from other materials. In particular:
 - i. Describe the range of contaminants that might reasonably be expected to require treatment based on their use on the site during its operational phase.
 - ii. Indicate recent experience in dealing with such wastes.
 - iii. Indicate potential waste disposal routes, including on-site disposals.
 - iv. Indicate what approvals or licences would be required for potential waste disposal routes under other legislation.
 - v. Indicate what waste materials, if any, will remain within safestore buildings that can only be dealt with during the site clearance phase.
 - vi. Indicate what waste materials, if any, have been buried on site during construction or operation of the site.
- 3) **BPEO/MADA.** The environmental statement covers alternatives for the timing of decommissioning by summarizing the results of the Multi-Attribute Decision Analysis (MADA) that was undertaken in 1998 to identify the Best Practicable Environmental Option (BPEO).
 - a. Further information is requested on environmental impacts arising from the alternatives for the timing of decommissioning. In particular:
 - i. Provide clarification that wastes, other than radioactive wastes, have been included in the studies.

- ii. Provide clarification that environmental impacts, other than radiological impacts, have been included in the studies.
- 4) **Baseline year.** The environmental statement covers baseline data.
 - a. Further information is requested on the year chosen for the baseline. In particular:
 - i. There are inconsistencies between the date of the baseline year presented in the environmental statement and that in the non-technical summary. Clarify the date of the baseline year.
- 5) **Radioactive discharge data.** The environmental statement covers control of radioactive discharges during the decommissioning process.
 - a. Further information is requested on radioactive discharge profiles. In particular:
 - i. Provide indicative radioactive discharge data for the works phase.
 - ii. Indicate outline radioactive discharge profiles for the care and maintenance and the site clearance phases.
- 6) **Models for release of radioactivity.** The environmental statement covers radiological impacts from untoward events.
 - a. Further information is requested on dispersion models used to predict radiological impacts of untoward events. In particular:
 - i. Provide clarification that the dispersion models used for release of radioactivity following untoward events are those routinely used for emergency planning at Bradwell Power Station.
- 7) **Air quality.** The environmental statement covers air quality up to 1km beyond the site boundary.
 - a. Further information is requested on air quality. In particular:
 - i. Clarify potential impacts on air quality up to and beyond a 2km zone around the site, including places such as Mersea Island, and clarify potential mitigation measures to control those impacts.
- 8) **Potential oil spills.** The environmental statement covers oil spill mitigation.
 - a. Further information is requested on potential oil spills.
 - i. Indicate the likely types and quantities of oils that will be held on site during all phases of decommissioning.
 - ii. Indicate how these compare with the types and quantities of oils that have been held on site during the operational life of the station.
- 9) **Groundwater and surface water.** The environmental statement covers groundwater assessments and storm drains for surface water.
 - a. Further information is requested on groundwater assessments. In particular:
 - i. Clarify whether groundwater vulnerability maps have been addressed in the groundwater assessments, and if not, clarify

whether consideration of groundwater vulnerability maps would have affected the outcomes of the studies.

- b. Further information is requested on the storm drain system. In particular:
 - i. The environmental statement covers the potential need for installation of storm drains during the care and maintenance phase. Indicate arrangements to identify the potential need for any enhancements to the storm drain system.
 - ii. Clarify how potential debris from construction and demolition work will be kept from entering storm drains during the works and site clearance phases.

10) **Blasting techniques.** The environmental statement covers impacts from construction and demolition activities.

- a. Further information is requested on blasting techniques. In particular:
 - i. Indicate the likelihood of using blasting techniques for construction or demolition activities.
 - ii. Indicate how potential noise and vibration impacts from blasting techniques compare with potential impacts from other construction and demolition machinery included in the studies.

11) **In-fill materials.** The environmental statement covers transport of in-fill materials by road.

- a. Further information is requested on the nature and source of in-fill materials. In particular:
 - i. Indicate the nature of in-fill materials being considered.
 - ii. Indicate potential on-site and off-site sources of in-fill materials.
 - iii. Indicate what approvals or licences would be required for in-fill materials under other legislation.

12) **Barrier wall.** The environmental statement covers dismantlement of the barrier wall.

- a. Further information is requested on dismantlement and removal of the barrier wall. In particular:
 - i. Clarify whether the barrier wall will be completely dismantled and removed, and the time of year this is likely to take place.
 - ii. Indicate arrangements to ensure that the seabed will be left free from obstructions following dismantlement and removal of the barrier wall.
 - iii. Clarify potential impacts on navigation during dismantlement and removal of the barrier wall, and clarify potential mitigation measures to control those impacts.
 - iv. Clarify potential impacts on leisure boat activity if dismantlement and removal of the barrier wall is carried out during the summer months, and clarify potential mitigation measures to control those impacts.
 - v. Clarify whether the timing of the removal of the baffle is important in hydrographic terms. If so, clarify potential ecological impacts relating to the timing, and clarify potential mitigation measures to control those impacts.

13) Transport modes. The environmental statement covers a range of transport modes.

- a. Further information is requested on the transport of barrier wall piles following their dismantlement. In particular:
 - i. There are ambiguities in the mode of transport for removal of barrier wall piles following their dismantlement in that transport by barge is advocated in paragraph 13.64, but impacts with respect to water transport were not considered in section 15. Clarify the proposed transport mode for removal of barrier wall piles following their dismantlement, or the range of options for their transport.
 - ii. Clarify potential environmental impacts for the proposed transport mode for removal of barrier wall piles following their dismantlement, or for the range of options for their transport, and clarify potential mitigation measures to control those impacts.
- b. Further information is requested on road transport. In particular:
 - i. There are ambiguities in the numbers of lorry loads of materials being carried to and from the site during the works and site clearance phases presented in Tables 3.1 and 3.2. Clarify the correct numbers.
 - ii. The numbers of lorry movements during all decommissioning phases will be lower than the baseline year. Indicate the likelihood of this reduction in lorry movements applying at weekends.
- c. Further information is requested on the transport of intermediate level waste (ILW) by rail. In particular:
 - i. There are inconsistencies between the descriptions of the phases during which ILW will be removed, and the period of years during which the removal will take place, in paragraphs 15.63, 16.35 and 16.36. Clarify the decommissioning phase and likely period of time in years during which ILW will be removed from the site and transported by rail.
 - ii. Indicate potential impacts on other rail users during transport of ILW by rail, and indicate potential mitigation measures to control those impacts.
 - iii. Indicate potential impacts on other transport modes if the rail system was no longer available for transport of ILW, and indicate potential mitigation measures to control those impacts.
- d. Further information is requested on rail transport. In particular:
 - i. Provide clarification for the basis of the decision not to transport materials or wastes (other than ILW) by rail.
 - ii. Provide clarification that transport of materials or wastes by rail (other than ILW) would not have affected the outcomes of the studies.
- e. Further information is requested on water transport. In particular:
 - i. Provide clarification for the basis of the decision not to transport materials or wastes by water.

- ii. Provide clarification that transport of materials or wastes by water would not have affected the outcomes of the studies.

14) Landscape and visual. The environmental statement covers landscape and visual issues.

- a. Further information is requested on landscape and visual impacts. In particular:
 - i. Clarify whether the landscape and visual assessments took account of the London Basin Natural Areas produced by English Nature. If not, clarify whether consideration of those Areas would have affected the outcomes of the studies. If so, clarify potential impacts relating to those Areas, and clarify potential mitigation measures to control those impacts.

15) Ecological action plans, designations and surveys. The environmental statement covers ecological action plans, designations and surveys.

- a. Further information is requested on ecological action plans. In particular:
 - i. Clarify whether the ecological assessments took account of the Essex Biodiversity Action Plan. If not, clarify whether consideration of that Plan would have affected the outcomes of the studies. If so, clarify potential impacts relating to that plan, and clarify potential mitigation measures to control those impacts.
- b. Further information is requested on ecological designations. In particular:
 - i. Section 13 covers international and national ecological designations, plus non-statutory sites of nature conservation and areas of ancient woodland up to 2km beyond the site boundary. Clarify whether ecological assessments took account of potential impacts on non-statutory sites of nature conservation and areas of ancient woodland between 2km and 5km beyond the site boundary. If not, clarify whether consideration of those sites and areas between 2km and 5km beyond the site boundary would have affected the outcomes of the studies. If so, clarify potential impacts relating to those sites and areas, and clarify potential mitigation methods to control those impacts.
- c. Further information is requested on ecological surveys. In particular:
 - i. Clarify the nature and purpose of recent ecological surveys that have been carried out.
 - ii. There are inconsistencies between the date of the single walkover survey presented in paragraphs 2.3 and 13.10. Clarify the correct date.

16) Ecological impact criteria. The environmental statement covers ecological impact criteria.

- a. Further information is requested on criteria for the significance of impacts. In particular:
 - i. Clarify the criteria for assessing the significance of the impact of a loss affecting up to 5% of a site feature, habitat or population,

of a Special Protection Area, candidate Special Area for Conservation, Ramsar Site and Site of Special Scientific Interest, and clarify the reasons for the criteria.

17) Ecological impacts on wildlife. The environmental statement covers ecological impacts on wildlife.

- a. Further information is requested on impacts on wildlife from changes in work activities. In particular:
 - i. Clarify potential ecological impacts on wildlife from changes in lighting associated with changes in night working, and clarify potential mitigation measures to control those impacts.
- b. Further information is requested on impacts on badgers. In particular:
 - i. Clarify the number of recorded active badger setts within 2km of the site boundary. Clarify potential ecological impacts on those badger setts, and clarify potential mitigation measures to control those impacts.
- c. Further information is requested on impacts on reptiles. In particular:
 - i. Clarify potential ecological impacts on reptiles, and clarify potential mitigation measures to control those impacts.
- d. Further information is requested on protected species. In particular:
 - i. Indicate arrangements to identify protected species. Clarify potential ecological impacts on any protected species identified, and clarify potential mitigation measures to control those impacts.

18) Mitigation for wildlife protection. The environmental statement covers mitigation for wildlife protection and habitat creation.

- a. Further information is requested on mitigation measures for wildlife protection and habitat creation during the works phase. In particular:
 - i. Indicate arrangements to assess the effectiveness of mitigation measures, and arrangements to revise them as necessary, during the works phase.
- b. Further information is requested on mitigation measures for wildlife protection and habitat creation during the ILW removal stage of the care and maintenance phase, and during the site clearance phase. In particular:
 - i. Indicate arrangements to identify the nature of the wildlife at the beginning of the ILW removal stage of the care and maintenance phase, and the beginning of the site clearance phase.
 - ii. Indicate arrangements to assess the effectiveness of mitigation measures, and arrangements to revise them as necessary, during the ILW removal stage of the care and maintenance phase, and during the site clearance phase.

ANNEX 6 Consultees who responded on the further information

HSE received 17 responses on the further information from 18 organisations and 2 members of the public.

British Energy

Blackwater Project

Chelmsford Borough Council

Countryside Agency

Crown Estate

Defence Estates

East of England Development Agency

English Nature

Environment Agency

Essex County Council

Food Standards Agency

Highways Agency

Kent & Essex Sea Fisheries Committee

Maldon District Council

Member of the public / North East Essex Badger Group

Member of the public

National Radiological Protection Board

Royal Yachting Association

West Mersea Town Council

ANNEX 7 Reasons for further information on the environmental statement

The topics requiring further information on the environmental statement are listed here with a brief explanation of why HSE considered that further information was necessary.

1. Secondary developments: HSE's pre-application opinion required that secondary effects be included in the environmental statement (see Annex 1, Appendix 2, paragraph 2). The environmental statement outlined proposals for a new ILW store that would be built during the works phase, emptied during the care and maintenance period, and dismantled during the site clearance phase. This store was adequately described for the purposes of EIADR99 in that the environmental statement gave an overview of the proposed store and explained that it would require approval under TCPA90 in due course. (Since the size of the ILW store is very likely to exceed one of the criteria in Schedule 2 to TCPRR99, the ILW store will almost certainly require an environmental impact assessment under TCPR99.) There were also references to other temporary buildings that would be required during the works and site clearance phases. These may require permissions under TCPA90 (some possibly requiring environmental impact assessment under TCPR99), but there was little indication of the legislation involved or the need for permissions. A clear picture did not emerge of the likely number or purpose of these buildings, or an indication of their likely impact on the environment.
2. Treatment of wastes: HSE's pre-application opinion required that options for the treatment of wastes be included in the environmental statement (see Annex 1, Appendix 2, paragraphs 1(e) and 5). The environmental statement adequately covered radioactive contamination and wastes. There were also references to non-radioactive contamination and wastes, including asbestos, chemicals, fuels, oils, demolition and recyclable wastes, and soils. Some of these would be covered by related health, safety and environment legislation, but there was little indication of the legislation involved or the need for licences or approvals. The descriptions of these wastes were superficial and gave little indication of the amount of potential contamination and wastes or their disposal routes.
3. BPEO/MADA: HSE's pre-application opinion required that the main options for the project be included in the environmental statement (see Annex 1, Appendix 2, paragraph 1). The environmental statement described the established methodologies that were used to identify the best option for the decommissioning project. The methodologies employed were Best Practicable Environmental Option (BPEO) and Multi-Attribute Decision Analysis (MADA). Radioactive wastes were considered, but it was not clear to what degree non-radioactive wastes had been considered. Although environmental nuisances had been considered in the BPEO/MADA process, it was not apparent how environmental impacts (other than radiological impacts) had been covered and whether these had any bearing on the option chosen.
4. Baseline year: the environmental statement covers baseline data. There were inconsistencies between the date of the baseline year presented in the environmental statement and that in the non-technical summary.

5. Radioactive discharge data: the environmental statement explained that radioactive discharge authorisations are covered by RSA93. Any new authorisation or change to an existing authorisation would require an application from the licensee to the EA. The EA would undertake a public consultation on any application, and one of the drivers in reaching a recommendation and ultimately a decision is the Government's policy to reduce discharges over time. Schedule 1 to EIADR99 requires a description of the emission of pollutants. The environmental statement did not present any indicative discharge data for the decommissioning project, which meant that it was difficult to form a view on how future discharges would compare with those during the operational life of the station.
6. Models for release of radioactivity: the environmental statement covered potential radiological impacts from untoward events. Schedule 1 to EIADR99 requires a description of the forecasting methods used to assess the effects on the environment, but the environmental statement did not identify the methods used to quantify these impacts.
7. Air quality: the environmental statement covered air quality (including the effects of dust) up to 1km beyond the site boundary. No consideration was given to the effects on more distant places still lying within a 2km zone around the site. HSE's pre-application opinion required that the area beyond the 2 km zone around the site boundary be addressed in the environmental statement (see Annex 1, Appendix 3, paragraph 4(a)).
8. Potential oil spills: the environmental statement described arrangements to deal with potential oil spills, but there was no indication of the quantities of oils that would be held on site during the decommissioning project; this point relates to the request for further information on the treatment of wastes. This meant that it was difficult to form a view on the likely magnitude of any spill which might occur, such as whether it might be similar to or much less than any spill which might have occurred during the operational life of the station.
9. Groundwater and surface water: the environmental statement covered groundwater assessments and the need for storm drains for surface water throughout the decommissioning project. It was unclear whether groundwater vulnerability maps were addressed. The methods to prevent debris entering storm drains were not clear in the environmental statement and although it was explained that new storm drains might be needed during later stages of the project, the arrangements to identify the need for and implement any necessary changes were not explained.
10. Blasting techniques: the environmental statement explained that some construction and demolition methods had yet to be decided. To allow for flexibility, the assessment of noise and vibration impacts used "worst case" impacts from a range of construction and demolition equipment. It was stated that blasting techniques might be required to demolish reactor buildings during the site clearance phase. The environmental statement gave no clear indication of the likelihood that blasting techniques would be used, whether they had been included in the noise and vibration assessments, and how impacts from blasting techniques might compare with those from other construction and demolition equipment.

11. In-fill materials: the environmental statement covered the transport of in-fill materials by road, and explained that demolition rubble from the site might also be used as in-fill material on site. Other than the latter, there was no indication of the types of materials that might be used (such as quarry material or demolition rubble from other sources) or where it might come from (such as local or distant locations). The legal requirements for approvals or licences for in-fill materials were also not indicated.
12. Barrier wall: the environmental statement discussed dismantlement of the barrier wall. It was not clear whether the wall would be completely removed and what arrangements would be implemented to ensure that the seabed is left free from obstruction following dismantlement and removal of the barrier wall. In addition, further information was required on the potential impacts on hydrography, navigation and leisure boat activity during and after dismantlement and on the likely time of year when work would be carried out.
13. Transport modes: HSE's pre-application opinion required that options for transport be included in the environmental statement (see Annex 1, Appendix 2, paragraph 1(d) & Appendix 3, paragraphs 9-12). The environmental statement adequately covered transport by road, but the basis of the decision not to transport materials or wastes by rail (other than ILW) or water was not adequately explained. It was also not clear whether impacts from these transport modes had been considered in the traffic and transport assessments, and if not, whether they would have affected the outcomes of the studies. Clarification was required regarding the numbers and timings of lorry loads to and from site during decommissioning. The environmental statement appeared to contain ambiguities in the mode of transport for removal of barrier wall piles following their removal and the associated potential environmental impacts. The environmental statement discussed transport of ILW by rail, but contained some inconsistencies regarding the timing of ILW removal, did not give a clear indication of the potential impacts on rail users and did not consider the potential impacts on other transport modes if the rail system were no longer available for transport of ILW.
14. Landscape & visual: HSE's pre-application opinion required that the environmental statement should include consideration of the London Basin Natural Areas produced by English Nature. These were not included in the environmental statement.
15. Ecological action plans, designations and surveys: the environmental statement covered ecological action plans, designations and surveys for areas around Bradwell Power Station, but it was not clear whether account had been taken of the Essex Biodiversity Action plan. Clarification was required on the potential impacts on non-statutory sites of nature conservation and ancient woodland between 2km and 5km from the site boundary. There were ambiguities and inconsistencies relating to the nature and purpose and timing of surveys.
16. Ecological impact criteria: the environmental statement included criteria for assessing the significance of ecological impacts but it was not always clear how these criteria were reached.
17. Ecological impacts on wildlife: the environmental statement covered ecological effects on wildlife but clarification was required regarding the

effects on wildlife from changes in lighting during night work, the numbers of recorded badgers and potential ecological impacts on these and reptiles and identification of protected species together with potential ecological impacts on these.

18. Mitigation for wildlife protection: the environmental statement explained the types of measures that might be used to mitigate impacts on wildlife, but the measures that would be necessary at any particular time during the decommissioning project would depend on the wildlife present at that time. It was not clear what arrangements would be in place to identify the necessary measures or how their effectiveness would be assessed.

ANNEX 8 Reasons for topics not pursued for further information

The topics raised by consultees on the environmental statement that were not pursued for further information on the environmental statement are listed here with a brief explanation of why HSE considered that further information was not necessary. In several cases, the topics are regulated under other legislation where compliance with that legislation would ensure that adverse environmental impacts would be minimal.

1. Timetable for decommissioning: the environmental statement presented options for decommissioning timetables, and the environmental impacts considered did not change the overall outcome of the decommissioning strategy selection process. Current Government policy considers the safestore strategy to be potentially feasible and acceptable. Government policy on decommissioning is under review, and the future NDA may have a role to play in decommissioning timetables.
2. ILW store: the purpose, size and location of the proposed ILW store are outlined in the environmental statement. The environmental impact of the proposed ILW store will almost certainly be dealt with under TCPR99 when Magnox Electric applies for planning permission for a development project from the relevant local planning authority. The process under these Regulations is similar to the process under EIADR99, and would involve public consultation. Nuclear safety aspects of the proposed ILW store will be regulated under NIA65 and enforced by HSE.
3. Integrity of the safestore: statutory controls for the safestore are outlined in the environmental statement. Nuclear safety aspects of the safestore, including its integrity over a period of up to 100 years, will be regulated under NIA65 and enforced by HSE.
4. Flood defences: the environmental impact assessment took account of information on climate change and guidance on long-term temperature, rainfall and sea level predictions, and outlined impacts of changes in sea levels on flood defences. Nuclear safety aspects of the safestore and proposed ILW store with regard to impacts from flood defences will be regulated under NIA65 and enforced by HSE. The integrity of flood defences is the responsibility of EA. The DEFRA consultation on the proposed Weymarks wetland restoration project has been noted. However, at this time the future of this project at Bradwell-on-Sea and potential effects on the decommissioning project are far from certain. If future developments, such as the Weymarks project, resulted in a change to the decommissioning project with associated significant adverse impacts on the environment, regulation 13 of EIADR99 would require Magnox Electric to submit a further environmental statement which would be subject to public consultation.
5. National repository: the environmental impact assessment was based on a national repository being available in the future. If such a repository were not available, then there would be a change or extension to the decommissioning project. If that change or extension may have significant adverse environmental effects, then Magnox Electric would have to apply for consent to carry out that change or extension to the decommissioning project, and

prepare an environmental statement on that change or extension for public consultation under EIADR99.

6. Aerial release of radioactivity: arrangements to control the release of radioactivity to air were outlined in the environmental statement. Planned discharges will be regulated under RSA93 and enforced by EA (although further information was requested on radioactive discharge profiles). Unplanned accidental releases of radioactivity together with estimated doses to people from such untoward events are covered in the environmental statement. Such unplanned accidental releases and untoward events will be regulated under RSA93, and NIA65 and REPPIR, as appropriate, and enforced by EA and HSE, respectively.
7. Radioactive contaminated ground: the environmental statement outlined the arrangements to assess radioactive contaminated ground on the nuclear licensed site and options for long-term management strategy. Radioactive contaminated ground on the site will be regulated under NIA65 and enforced by HSE. Disposal of contaminated soils at a facility off the site will be regulated under RSA93 and enforced by EA.
8. Non-radioactive contaminated ground: the environmental statement outlined the arrangements to assess non-radioactive contaminated ground as demolition work allows access to potentially contaminated areas, including consultation with HSE and EA on sampling programmes. The statement also covered potential mitigation measures. Non-radioactive contaminated ground will be regulated under the Contaminated Land (England) Regulations 2000 and enforced by EA.
9. Restriction of working hours: the environmental statement outlined the arrangements to control the main noise generating activities to daytime hours between 8am and 5pm. Working outside these hours would be by prior agreement with the relevant local authority.
10. Security and terrorism: terrorism is the responsibility of the Office of Civil Nuclear Safety in DTI. The 2-mile exclusion zone around the site is the responsibility of CAA. NIA65 covers emergency arrangements, including evacuation.
11. Funding for decommissioning: funding for decommissioning is the responsibility of DTI.
12. New developments near the site: new developments near the site are covered by town and country planning legislation. Arrangements are in place between local planning authorities and HSE on all such planning applications.
13. Re-cladding of reactor buildings: re-cladding of reactor buildings is covered by town and country planning legislation.
14. Packaging and long term storage of ILW: safety aspects of packaging and long-term storage of ILW are covered by NIA65, RSA93, and Nirex (and the forthcoming NDA).
15. Contamination of dismantling equipment: radioactive-contaminated equipment would become LLW or ILW, and be covered by NIA65, RSA93 and IRR99.

16. Incineration: incineration is covered by environmental legislation and enforced by EA.
17. Aqueous radioactive discharges: radioactive aqueous discharges, including radioactive contamination of sediment in the estuary, environmental monitoring of mudflats and beaches, and taking account of tides, are covered by RSA93 and enforced by EA. Current contamination is mostly from operational activities. Overall discharges will reduce during decommissioning, and the same arrangements under RSA93 will be in place.
18. Treated sewage discharges: the ES explained that the reduction in sewage discharge might affect birds, but that the impact is minute. The reduction in sewage is allowing the estuary to return to its more natural state.
19. Emergency arrangements: NIA65 covers emergency arrangements. Non-radioactive incidents are covered by HSWA74 and other relevant legislation.
20. De-licensing and post-decommissioning land use: the long-term aim of decommissioning is to de-licence the site and to make it available for unrestricted use, and this is covered by NIA65.
21. Ecological impacts from flood defences: impacts from flood defence integrity on safety are covered under NIA65 (periodic reviews of safety cases). Impacts from flood defence integrity with respect to ecological issues are covered under environmental legislation (including The Conservation (Natural Habitats &c) Regulations 1994, The Conservation (Natural Habitats &c) (Amendment) Regulations 1997, and Countryside and Rights of Way Act 2000).
22. Power lines: the National Grid owns power lines, and it is its responsibility to consider whether or not to remove power lines.
23. Vibration (potential vibration damage cause by weapons testing on the Dengie Peninsula): External hazards, including vibration and seismic events, are covered by NIA65 and considered in safety cases.

ANNEX 9 Reasons for not seeking further clarification

The topics raised by consultees on the further information are listed here with a brief explanation of why HSE considered that further clarification was not necessary. In several cases, the topics are regulated under other legislation where compliance with that legislation would ensure that adverse environmental impacts would be minimal.

1. Secondary developments, refit of the visitors' centre: the further information explained that the work to refit the visitors' centre for construction workers' use would be during the works phase. The building will be removed at the end of the works phase.
2. Secondary developments, free release facility: The further information explained that the free release facility will be for processing of waste only (not storage). Disposal of wastes which are below regulatory concern are dealt with in the environmental statement and further information. Disposal of radioactive waste is regulated by the Environmental Agency under RSA93.
3. Radioactive contaminated asbestos: the further information explained that radioactive contaminated asbestos would be soaked with water to minimise the release of asbestos fibres before stripping, and radioactive water would be removed by supercompaction from the water-soaked radioactive contaminated asbestos. Asbestos-free radioactive water will be discharged, and it will be regulated under RSA93 and enforced by EA. Radioactive contaminated asbestos will be dealt with as radioactive waste, and will be regulated under RSA93 and enforced by EA.
4. Flood defences: the environmental impact assessment took account of information on climate change and guidance on long-term temperature, rainfall and sea level predictions, and outlined impacts of changes in sea levels on flood defences. Nuclear safety aspects of the safestore and proposed ILW store with regard to impacts from flood defences will be regulated under NIA65 and enforced by HSE. The integrity of flood defences is the responsibility of EA.
5. Landscape and visual, natural areas: It is considered that the adequacy of the environmental statement (and associated further information) is not compromised by the original lack of reference to Natural Areas. This is because Natural Areas cover far too great an area for specific impacts to be identified in relation to them alone.
6. Treatment of non-radioactive hazardous wastes: The environmental statement and further information explained that all waste transported offsite will be carried by licensed waste carriers and that the choice of disposal route will include licensed asbestos disposal sites, landfill sites, licensed special waste disposal contractors and recycling companies. The actual choice of contractor will depend on available service providers at the time the work is carried out. Disposal of wastes is regulated by the environment agency.
7. Transport modes; rail and water transport of waste (other than ILW) and materials: The further information explained that no final decision has yet been made that would foreclose the option of transporting materials by water, road or rail, but notes that transport by both rail and water would require

double handling of loads (to load / unload at the railhead or docking point). In addition, the intention to use local suppliers and waste contractors where possible means that many journeys are likely to be short. The most likely candidate for water transport would be large indivisible loads and there are not likely to be any of these.

8. Potential for disturbance of radionuclides in sediments in estuary (from past operation of the station): Radioactive aqueous discharges, including radioactive contamination of sediment in the estuary, environmental monitoring of mudflats and beaches, and taking account of tides, are covered by RSA93 and enforced by EA. It is noted that current contamination is mostly from operational activities. Overall discharges will reduce during decommissioning, and the same arrangements under RSA93 will be in place

9. ANNEX 10 Consent and conditions

Decommissioning Project Consent No.1

December 2003

NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR DECOMMISSIONING) REGULATIONS 1999

CONSENT

granted under regulation 4(b)
in accordance with regulation 8(3)
with conditions attached under regulation 8(4)

BRADWELL POWER STATION

The Health and Safety Executive, for the purposes of regulation 4(b) in accordance with regulation 8(3), hereby grants consent for carrying out the project¹ applied for under regulation 4(a), in particular, to remove all buildings except the reactor buildings, alter the reactor buildings for a period of deferment, retrieve and package operational intermediate level waste, store the intermediate level waste until it can be removed from the site, and clear the site, subject to the conditions under regulation 8(4) attached.

Dated: 5th December 2003

For and on behalf of the
Health and Safety Executive

Signed

M W Weightman
A person authorised to act in
that behalf

¹ Project as defined in regulation 2

**NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR
DECOMMISSIONING) REGULATIONS 1999**

CONDITIONS

attached under regulation 8(4)
to Decommissioning Project Consent No. 1 granted under regulation 4(b)

BRADWELLPOWER STATION

Condition 1

The project² shall commence before the expiration of 5 years from the date of this Consent.

Condition 2

(1) The licensee is required to prepare and implement an environmental management plan to cover mitigation measures to prevent, reduce and where possible offset any significant adverse effects on the environment.

(2) The project shall not be carried out except in accordance with the environmental management plan.

Condition 3

Within 90 days of the date of this Consent, with reference to the environmental statement provided under regulation 5(1) and further information provided under regulation 10(1), the environmental management plan shall:

- a. list the mitigation measures that are already identified;
- b. list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future;
- c. list the work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future.

Condition 4

Subsequent to condition 3, the environmental management plan shall:

- a. with reference to condition 3b, identify the mitigation measures for options that have been selected, giving reasons for their selection;

² Project as defined in regulation 2

- b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;
- c. describe the effectiveness of the mitigation measures over time;
- d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5

The licensee is required to:

- a. provide the environmental management plan to the Health and Safety Executive within 90 days of the date of this Consent and every year thereafter, or within such longer time as the Executive may agree;
- b. make the environmental management plan available to the public within 30 days of the plan being sent to the Health and Safety Executive, or within such longer time as the Executive may agree; the plan may replace earlier versions.

Condition 6

The licensee is required to provide notice to the Health and Safety Executive of any significant change to a mitigation measure to prevent, reduce and where possible offset any major adverse effects on the environment no less than 30 days before the change is made, or within such shorter time as the Executive may agree.

Dated: 5th December 2003

For and on behalf of the
Health and Safety Executive

Signed

M W Weightman
A person authorised to act in
that behalf

ANNEX 11 Summary of environmental benefits and detriments

A summary of the benefits and detriments of the environmental impacts identified by Magnox Electric is given here.

1. Socio-economic: 96 topic areas were assessed, and the vast majority of the impacts were either not significant, or if they were significant or key significant, they were reversible (irrespective of whether they were adverse or beneficial impacts). Only 7 topic areas had long-term irreversible impacts, and these were slight or major adverse impacts which were significant or key significant, or their significance was uncertain. They were largely direct or indirect employment impacts at the geographical district level of importance after decommissioning had been completed and the site cleared.
2. Ecology: 23 topics areas were assessed, of which only 2 had significant adverse impacts and these were slight in nature. The effects related to the temporary disturbance of wintering birds feeding close to the power station.
3. Landscape and visual: 60 topic areas were assessed, and all the significant or key significant irreversible effects were beneficial. Only 8 impacts were identified as short-term significant adverse and 1 as long-term significant adverse. All the significant adverse effects were slight or moderate, temporary, and related to temporary buildings such as the ILW store, and to construction or demolition work involving, for example, cranes.
4. Surface water quality and drainage: 17 topic areas were assessed, and 3 were significant. These were long-term irreversible beneficial impacts where the magnitude was slight (from reductions in aqueous radioactive discharges).
5. Traffic and transport: 20 topic areas were assessed, of which all were significant, being a mix of beneficial and adverse impacts of varying magnitude. All were long term and reversible and related to changes in the amount of traffic on roads in the surrounding region. It is important to note that of the 13 adverse impacts, all but two were at least in part due to predicted general traffic growth over the period of the decommissioning project which, although unrelated to the site will mask actual reductions in traffic associated with the station.
6. Noise and vibration: 32 topic areas were assessed, and 8 had significant impacts of which 4 were minor to moderate benefits and 4 were moderate-to-major adverse impacts. All of the benefits were long term, two reversible and two irreversible and related to cessation of noise from the station. The adverse effects were reversible and long term but related to short duration intermittent events during demolition. Two related to adverse impacts on livestock and fauna off the site, with the magnitude of the impact increasing with proximity to the site. Two related to residents of Downhall Beach.
7. Geology, hydrogeology and soils: 14 topic areas were assessed, and all the impacts were insignificant.
8. Air quality and climatic factors: 13 topic areas were assessed, of which only 3 were significant minor adverse, and all were reversible. Of these, 2 long-term impacts related to dust deposition associated with work activities during works

and site clearance phases and 1 short-term impact related to dust due to removal of ILW from the store during the care and maintenance period.

9. Archaeology and cultural heritage: The scoping report indicated that the potential for archaeological remains on the site were negligible, so no further assessment was undertaken. However, it was recommended that the Royal Commission on Historical Monuments in England (RCHME) carry out a level 1 survey before decommissioning commences.