



**The decision on the application to
carry out a decommissioning project
at Chapelcross 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



Health & Safety Executive
HM Nuclear Installations Inspectorate

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Published by the Health and Safety Executive
September 2005

Further copies are available from:

Health and Safety Executive
Nuclear Safety Directorate Information Centre
St Peter's House
Stanley Precinct
Bootle
Merseyside
L20 3LZ

Tel: 0151 951 4000

email: nsd.infocentre@hse.gsi.gov.uk

Available on the internet from:

<http://www.hse.gov.uk/nuclear>

FOREWORD

This document reports on the Health and Safety Executive's decision to grant consent for a decommissioning project at Chapelcross Nuclear Power Station to the licensee, Magnox Electric Ltd, under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999. Chapelcross is the fourth nuclear power station at which consent has been granted for a decommissioning project, the first three being Hinkley Point A, Bradwell and Calder Hall.

The process of considering potential environmental impacts has involved extensive public consultation, and there has been a great deal of interest shown by national bodies and local groups alike. I believe that the process has been open and inclusive and I sincerely thank everyone who has been involved in this important work, 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 effective control of potential environmental impacts during the decommissioning of the Chapelcross Nuclear Power Station. We have attached conditions to the Consent to require the licensee to provide us with a copy of its environmental management plan and its subsequent revisions. 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. Experience so far (at Hinkley Point A and Bradwell) has shown that this provides an effective means of managing potential environmental impacts.

During our decision-making process we have strived to be 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.

Mike Weightman
Director of Nuclear Safety and
HM Chief Inspector of Nuclear Installations
Health and Safety Executive
St Peter's House
Stanley Precinct
Bootle
Merseyside
L20 3LZ

SUMMARY

European Council Directive 85/337/EEC[1], as amended by Council Directive 97/11/EC[2], 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 (EIADR)[3].

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 former licensee of Chapelcross Power Station, British Nuclear Fuels plc (BNFL), now Magnox Electric Ltd, requested a pre-application opinion and provided information in a scoping report in October 2003. HSE undertook a public consultation on the scoping report and provided its pre-application opinion in March 2004. The licensee applied to HSE for consent to carry out a decommissioning project and provided an environmental statement in October 2004. HSE undertook a public consultation on the environmental statement. Both public consultations involved around 60 organisations. Following the consultation on the environmental statement, HSE requested evidence to verify information in the environmental statement, regarding certain aspects of the assessment. Having considered this evidence, HSE was able to make a decision to grant consent to carry out a decommissioning project at Chapelcross Power Station under the Regulations in September 2005, 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 evidence; 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 Ltd 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.

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INTRODUCTION

1. European Council Directive 85/337/EEC[1], as amended by Council Directive 97/11/EC[2], 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[4] and the Environmental Impact Assessment (Scotland) Regulations 1999 (EIA(S)R99)[5]. 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 (EIADR)[3]. These Regulations cover the dismantling or decommissioning of nuclear power stations and other nuclear reactors. The competent authority for EIADR is the Health and Safety Executive (HSE).
4. The previous licensee of Chapelcross Power Station, British Nuclear Fuels plc (BNFL), now Magnox Electric Ltd, applied to HSE for consent to carry out a decommissioning project under EIADR in October 2004.
5. This document reports on HSE's decision to grant consent for a decommissioning project at Chapelcross 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 Ltd 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)[6] 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)[7] 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)[8] and Radiation (Emergency Preparedness and Public Information) Regulations 2001 (REPPPIR)[9], respectively, and enforced by HSE. Radioactive discharges are regulated under the Radioactive Substances Act 1993 (RSA93)[10] 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. EIADR 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 23); EIADR 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. The Nuclear

Decommissioning Authority (NDA) has the responsibility for the liabilities arising from past and future government civil nuclear programmes¹ and HSE liaises with NDA on issues of mutual interest regarding the decommissioning of reactors.

Legislative process under EIADR

Application for consent to carry out a decommissioning project

14. The intention of the EIA Directive and EIADR 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. EIADR 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 EIADR, 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 preparing 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 EIADR, 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 EIADR 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 cumulative 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.

¹ Arising from installations formally owned by BNFL and UKAEA

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.

Evidence to verify information in the environmental statement

21. HSE may ask the licensee to produce evidence to verify any information in the environmental statement. Evidence is not subject to public consultation.

Change or extension to a decommissioning project

22. 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 EIADR came into force (that is, whether consent for the project was granted under EIADR, 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

23. EIADR 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

24. At the end of the public consultation on the environmental statement including 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 EIADR. If HSE decides to grant consent, HSE may

attach conditions to the consent 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 EIADR.

Transparency of HSE's decision on an application

25. 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 EIADR. 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

26. BNFL wrote to HSE in October 2003 to request a pre-application opinion on what the environmental statement for Chapelcross Power Station should contain. BNFL provided information in the format of a Pre-Application Opinion Report. HSE consulted the consultation bodies and other organisations that it wished to consult (including all members of the Local Community Liaison Committee (LCLC²)) on that report during November 2003 to February 2004. HSE's pre-application opinion was sent to BNFL in March 2004. The pre-application opinion was copied to consultees in March 2004, 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 2 to Annex 1 lists the consultees who responded on the scoping report and who were content for their names to be made publicly available. Copies of the scoping report, pre-application opinion and responses to the consultation (where consultees were content for their responses to be made publicly available) can be inspected at public libraries close to site, HSE's Library and Area Office (see Appendices 7 and 8 to Annex 1).

Public consultation on the environmental statement

27. BNFL wrote to HSE to apply for consent to carry out a decommissioning project at Chapelcross Power Station and provided an environmental statement in October 2004. HSE consulted the same bodies and organisations on the environmental statement that were involved in the

² The Local Community Liaison Committee has now been replaced at Chapelcross Power Station by an independently chaired Site Stakeholder Group

consultation on the scoping report. In addition, BNFL publicised the environmental statement in the local press (Annandale Herald, Annandale Observer, Dumfries Courier, Dumfries and Galloway Standard and News and Star) to involve local people. HSE publicised the consultation on the environmental statement on its web site, which had a direct link to BNFL web site. BNFL 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 (Glasgow, Appendix 7 to Annex 1), public libraries close to the site (Appendix 8 to Annex 1) and HSE Library and Area Office (Bootle, Appendix 7 to Annex 1).

28. The public consultation period ended in January 2005. The consultees who were contacted by HSE are listed in Annex 2. The consultees who responded and were content for their comments to be made publicly available are listed in Annex 3. Copies of these responses were sent to the licensee, and copies can be inspected at Public libraries close to site, HSE's Library and Area Office (see Appendices 7 and 8 to Annex 1).

Request for evidence to verify information within the environmental statement

29. HSE was of the opinion that evidence to verify information in the environmental statement was necessary. HSE wrote to the current licensee, Magnox Electric Ltd, in June 2005 to request evidence relating to the assessment of effects and mitigation measures for potential disturbance of existing ground contamination at Chapelcross during the decommissioning process, also the management and disposal of certain contaminated material, and the management of an active effluent pipeline. A copy of this letter is appended as Annex 4. Magnox Electric Ltd's response was received in July 2005. The request for evidence is discussed in Annex 5.
30. HSE was of the opinion that further information was not necessary before it could make its decision. Annex 6 provides an explanation as to why further information was not requested for specific topics.
31. Copies of the environmental statement, and evidence, will be available for public inspection at public libraries close to the site, HSE's Library and Area Offices (see Appendices 7 and 8 to Annex 1) for a period of one year from the date of the Consent that was granted by HSE (that is, until September 2006)

Organisations involved in the consultation process

32. HSE considered the environmental statement (including evidence) for Chapelcross Power Station. HSE's consideration included holding discussions with Chapelcross Power Station's site inspectors (from HSE (HM Nuclear Installations Inspectorate - NII) and SEPA), and independent consultants contracted to HSE, as well as taking into account written comments received during the public consultations.
33. 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.
34. HSE also took account of the views of the other organisations it consulted and which provided comments (see Annex 3). These organisations have expertise, knowledge or interest in nuclear, planning and environmental matters, and included: Government departments, agencies and bodies (such

as the Scottish Executive, Food Standards Agency and Health Protection Agency (formerly known as National Radiological Protection Board); and local groups (such as the LCLC)

Topics raised by consultees on the environmental statement – an overview

35. Some consultees provided comments on topics that were relevant to the environmental impact assessment process under EIADR and for which sufficient evidence was not presented in the environmental statement. These topics were pursued through HSE's request for evidence.
36. 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 EIADR. 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. Other topics were the subject of wider government policy on decommissioning. These topics were not pursued for the purposes of further information or evidence.
37. 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).
38. Some responses indicated a desire for continued involvement in discussions regarding various aspects of the decommissioning project. The licensee has undertaken to continue discussions with these respondents on issues about which those respondents have specific concerns.

Request for evidence – including topics raised by consultees

39. HSE requested evidence to verify information in the environmental statement regarding topics associated with the assessment of effects and mitigation measures for potential disturbance of existing contamination at Chapelcross during the decommissioning project, also the management and disposal of certain contaminated material, and the management of an active effluent pipeline. 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 evidence was required to verify the information provided and conclusions made.
40. Full details of the request for evidence are included in HSE's letter to Magnox Electric Ltd that is appended as Annex 4. A brief explanation of why HSE considered that this evidence was necessary is provided in Annex 5.

Topics not pursued for evidence or further information – topics raised by consultees

41. 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 EIADR. Consultees also raised a number of topics that HSE considered had been dealt with reasonably in the environmental statement, when the very long timescale of the project and resulting uncertainties are taken into account. Consequently, 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 42 to 47).

42. An area of concern for some consultees related to the effects (both direct and indirect) of reduction in workforce at Chapelcross. The environmental statement described the assessed effects and discussed mitigation measures that will be implemented and which may reduce the magnitude of some of these. The statement noted that it is expected that additional mitigation will result from the wider regeneration initiatives currently being undertaken by The Corridor Regeneration Strategy Steering Group.
43. 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 that resulted in different timetables for decommissioning and then described and justified 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 has recently been reviewed (see paragraphs 67 to 73). It is for these reasons that the timetable for decommissioning was not pursued for the purposes of further information.
44. Some consultees expressed concern regarding information on waste treatment and disposal (including radioactive waste). The environmental statement provided information on wastes and potential radioactive emissions (including indicative figures), but noted that authorised discharges will continue to be made under RSA93 and regulated by SEPA.
45. Arrangements for security during the decommissioning project and the possibility of terrorist acts targeted at the site was a concern. 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 the licensee's emergency arrangements.
46. 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.
47. 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 6 with a brief explanation of why HSE took this view.

REASONS FOR GRANTING CONSENT

Decision to grant consent

48. HSE granted consent to carry out a decommissioning project at Chapelcross Power Station under EIADR in September 2005, and attached conditions to the Consent; a copy of the Consent and conditions is appended as Annex 7.

49. 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 evidence.
 - 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

50. In HSE's view, the environmental statement and evidence provided all the information that was reasonably required and that Magnox Electric Ltd 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.
51. 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 gave confidence that Magnox Electric Ltd had not foreclosed unnecessarily, at this early stage, possible appropriate approaches to the decommissioning process. In such cases, Magnox Electric Ltd used "worst case" impacts in assessments, providing assurance that, whichever approach is adopted, any potential impacts are likely to be less than those determined by the assessment.

Environmental benefits and detriments and consideration of measures to control adverse environmental effects (mitigation measures)

52. In HSE's view, the environmental statement (including evidence) 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 or not significant. The non-technical summary of the environmental statement summarised the key significant impacts.
53. A summary of the benefits and detriments of the environmental impacts identified by Magnox Electric Ltd is given in Annex 8. There was only one area (socio-economic) where one key significant permanent adverse impact was identified relating to the permanent loss of existing station employment. However mitigation measures have been identified to reduce the magnitude of this. A number of short to medium term key significant adverse impacts were identified in the landscape and visual assessment. These relate to an increase in activity and movement during final site clearance with the introduction of industrial activity.

54. There were six areas where *significant adverse impacts* were identified. These were socio-economic factors, landscape and visual, ecology, surface water quality and drainage, geology hydrogeology and soils, and noise and vibration. These effects varied in magnitude and duration (see Annex 8). With the exception of the socio-economic topic area, appropriate mitigation measures have been identified in the assessment to render any long-term effects not significant. The long-term, adverse impacts in the socio-economic topic area relate to employment levels at the site and in the surrounding area. Of these impacts, the majority were rated as potentially significant and ranged from slight to major effects, with a small number identified as having a major benefit. The mitigation measures identified in the environmental statement may reduce the magnitude of these and it is expected that additional mitigation will result from the wider regeneration initiatives currently being undertaken in the region.
55. Six topic areas showed *long-term, positive impacts* of varying magnitude. These were landscape and visual, surface water quality and drainage, socio-economic, geology hydrogeology and soils, and traffic and transport.
56. Impacts relating to air quality and climatic factors were not significant 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, although it was recommended that the Royal Commission on Historical and Ancient Monuments in Scotland carry out a Level One survey before decommissioning commences. In addition, the licensee has undertaken to consider appropriate means of retaining the heritage interest associated with the design, layout, technology and operation of the power station itself and to discuss this with Scottish Natural Heritage and Solway Heritage.
57. Further details on environmental effects and measures to control environmental effects are provided in Annex 8

Effects on other countries

58. The environmental statement predicted that the only areas that may have key significant adverse environmental impacts were socio-economic and landscape and visual. Both of these impacts are limited to the geographical area relatively close to the power station. Significant adverse impacts were identified in ecology, surface water and drainage, noise and vibration, and geology, hydrology and soils. All of these impacts are also limited to the geographical area relatively close to the power station. Therefore, 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

59. Where there are new structures to be built or substantial alterations to buildings, then these developments will require planning consent. This will be obtained from the local planning authority, i.e. Dumfries and Galloway Council. Projects that will require planning consent at Chapelcross include the construction of a building to house the intermediate level waste retrieval, processing and packaging facility; construction of the radioactive waste storage building; and re-cladding of the reactor buildings. Where necessary, these will be regulated under the Town and Country Planning Act (Scotland)

1997 (TCPA97)[11] and enforced by the relevant local planning authorities. HSE will be consulted on any associated applications for planning permissions by the relevant local planning authorities. Temporary installations to process and or store radioactive waste might also require environmental impact assessment under EIA(S)R99 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). In such cases where environmental impact assessment is required (under EIA(S)R99), the public will also be consulted before any decision is made.

60. 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 TCPA97 and associated legislation and enforced by the relevant local planning authorities.
61. It follows, therefore, that Magnox Electric Ltd 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.
62. HSE and the local planning authorities have had and will continue to have discussions on the interface between EIADR, NIA65, EIA(S)R99 and other town and country planning legislation, as necessary.

Issues covered elsewhere – health, safety and environment legislation

63. The environmental statement (including evidence) 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).
64. HSE is satisfied that control of such health, safety and environment matters is achieved and will continue to be achieved through regulation and enforcement of existing legislation. Compliance with relevant legislation should ensure that adverse environmental impacts would be minimal. The majority of the legislation is enforced by HSE and SEPA, and there are administrative arrangements in place between HSE and SEPA on working together on matters of mutual interest (see paragraphs 12 and 13).
65. It follows, therefore, that Magnox Electric Ltd 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.
66. HSE and SEPA have had and will continue to have discussions on the interface between EIADR, NIA65, RSA93 and other health, safety and environment legislation, as necessary.

Issues covered elsewhere – decommissioning timetables: The relation of government policy, quinquennial review process (QQR) and European initiatives to EIADR and the Chapelcross environmental statement

Government Policy

67. Government policy on decommissioning the UK's nuclear facilities was previously summarised in paragraphs 120 to 131 of the White Paper "Review of Radioactive Waste Management Policy: Final Conclusions" (CM2919)[12]. The document stated 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.
68. In November 2003, the government published a consultation document on the proposal to update and revise its nuclear decommissioning policy. Following consultation, a revised government policy statement "The Decommissioning of the UK Nuclear Industry's Facilities"[13] was published September 2004, and replaces the previous statement contained in paragraphs 120 to 131 of Cm2919.
69. The revised decommissioning policy covers all (existing and new) UK nuclear industry facilities. This includes power stations, other reactors, research facilities, fuel fabrication and reprocessing plants and laboratories on sites licensed under NIA 65. Each nuclear operator is expected to produce and maintain a decommissioning strategy and plans for the site, including its future use.
70. The Government White Paper, "Managing the Nuclear Legacy – A Strategy for Action" (Cm 5552)[14] was published in July 2002, and subsequently the Nuclear Decommissioning Authority (NDA) was established by the Energy Act 2004 [15], to take responsibility for the liabilities arising from past and future government civil nuclear programmes. The NDA is 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.

QQR

71. An environmental statement under EIADR needs to describe the options for decommissioning, including decommissioning timetables. Information about licensee's decommissioning timetables is also provided by the Quinquennial review (QQR) process; to ensure that operators' decommissioning strategies remain soundly based as circumstances change, HSE was requested (as per the requirements of Cm2919) to review these strategies every five years in consultation with EA or SEPA. The revised government decommissioning policy indicates that, except where equivalent arrangements are put in place (eg by the NDA), strategies should continue to be subject to regular periodic reviews, at least every five years, by HSE in consultation with the environment agencies. EIADR would only play an important role if environmental impacts were affected by those timetables.
72. BNFL's decommissioning strategy was sent to HSE in April 2000 and HSE published its QQR in February 2002. The decommissioning strategy is

detailed in the environmental statement submitted by Chapelcross, paragraphs 3.1 - 3.12. In this review, HSE identified issues, which it considered Magnox Electric Ltd 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.

73. It is possible that decommissioning timetables might change in the future, perhaps in response to the QQR process or activities of the NDA. An environmental statement should, therefore, clarify whether it is technically feasible to accommodate timetable changes. If such a change to a decommissioning timetable resulted in a change to a decommissioning project, which may have significant adverse environmental effects, then the requirements of regulation 13 of EIADR would apply.

European Commission initiatives

74. Regulations implementing Council Directive 2001/42/EC [16] on the assessment of the effects of certain plans and programmes on the environment (known as the Strategic Environmental Assessment (SEA) Directive) came into force 21 July 2004[17]. 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 EIADR).

Chapelcross environmental statement

75. The environmental statement described options for decommissioning, including the safestore strategy, options for decommissioning timetables, cooling tower demolition and the future re-use of the land. A range of environmental impacts (including radioactive and non-radioactive wastes, waste minimisation, noise and vibration, transport, ecology, surface water quality and visual impacts) were considered during the process to develop the decommissioning strategy. Consideration of the environmental impacts did not change the overall outcome of the strategy selection process.
76. The environmental statement stated that the duration of the works phase, care and maintenance period, and site clearance phase, was around 12, 100, 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 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.
77. However, it should be noted that if a change to the decommissioning timetable resulted in a change to the decommissioning project that may have significant adverse environmental effects, then Magnox Electric Ltd must apply to HSE for a determination as to whether the change should be subjected to an environmental impact assessment. If so, Magnox Electric Ltd 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 EIADR.

CONDITIONS ATTACHED TO THE CONSENT

Content of the conditions

78. HSE has attached conditions to the Consent. A copy of the Consent and conditions is appended as Annex 7. In brief, Magnox Electric Ltd 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.
79. Regulation 16 of EIADR provides HSE with sufficient powers under HSWA74 to effectively enforce these conditions.
80. A copy of the environmental management plan will be made available for public inspection at public libraries close to the site, HSE's Library and Area Office (see Appendices 7 and 8 to Annex 1), and the plan will be replaced by subsequent revisions as these are provided.

Reasons for the conditions

81. 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

82. Condition 1 requires Magnox Electric Ltd to start the decommissioning project within five years of consent being granted. The project is dismantling or decommissioning work on the power station to which EIADR relate.

Condition 2

83. Condition 2 requires Magnox Electric Ltd 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

84. 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 (as identified in the environmental statement and supporting evidence).
 - 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.
85. Most of the work activities have associated mitigation measures in the environmental statement (including evidence), 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.
 86. 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 (including evidence), 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.
 87. 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 the 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

88. 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.
89. 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.
90. 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

91. Condition 5 requires Magnox Electric Ltd 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 five to ten years. Timeframes for the site clearance phase are likely to be similar to those for the works phase.

92. Condition 5 also requires Magnox Electric Ltd 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

93. Condition 6 requires Magnox Electric Ltd 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, mitigation measures might not work as predicted, and changes to mitigation measures might become necessary to control major adverse environmental effects in the future.

REFERENCES

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4. Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, SI 1999 No. 293; HMSO 1999, ISBN 0-11-080474-0
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14. Department of Trade and Industry, *Managing the Nuclear Legacy – A Strategy for Action*, Cm 5552, HMSO 2002, ISBN 0-10-155522-9
15. Energy Act 2004, HMSO 2004, ISBN 0-10-542004-2
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17. The Environmental Assessment of Plans and Programmes Regulations 2004, SI No. 1633, HMSO 2004, ISBN 0-11-049455-5

GLOSSARY OF TERMS AND ABBREVIATIONS

BNFL	British Nuclear Fuels plc
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
EIA(S)R99	Environmental Impact Assessment (Scotland) Regulations 1999
EIADR	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
MADA	Multi-Attribute Decision Analysis
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
TCPA97	Town and Country Planning Act (Scotland) 1997

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 Chapelcross Nuclear Power Station

Issue

- 1) To state the Executive's pre-application opinion as to the content of the environmental statement for Chapelcross 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, referred to as the Executive in EIADR) for consent, 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, 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 Chapelcross 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 "Chapelcross Nuclear Power Station Pre-Application Opinion Report". The scoping report identifies a range of issues and considers these in the context of the proposed scope of the environmental statement.

- 6) The procedure for a pre-application opinion is similar to that for 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) BNFL has chosen to provide a detailed document as its submission for a pre-application opinion. This, therefore, includes material that will form part of the environmental statement and preliminary analyses of the environmental impact of the project. Some of these preliminary analyses indicate that the project will have negligible effects on certain aspects of the environment. HSE has considered this information, taking into account the comments of consultees, and in some instances is of the opinion that BNFL has done sufficient work on such aspects. In these cases, listed in Appendix 4, HSE is of the opinion that no additional information or assessment beyond that provided in the scoping report is needed in the environmental statement. In other instances, although BNFL has indicated that it believes the environmental impact will be negligible, HSE's view is that the evidence presented is not sufficient to justify this opinion and therefore these topics will need to be addressed further in the environmental statement.
- 8) The environmental statement for Chapelcross Nuclear Power Station, when submitted to HSE, should address such of the information specified in Schedule 1 Part I to EIADR which is reasonably required to assess the environmental effects of the proposed project. In addition, the environmental statement must address all the information specified in Schedule 1 Part II to EIADR. If, on receiving the information, HSE's opinion is that such information is not sufficient, then EIADR gives HSE the power to require the licensee to provide further information.

Consultation

- 9) 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. The list of respondents is given in Appendix 2.
- 10) 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.

- 11) 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 and general content

- 12) The licensee's scoping report provides an overview of the issues to be addressed in the environmental statement:
 - a) Air quality and climatic factors;
 - b) Archaeology and cultural heritage;
 - c) Ecology;
 - d) Geology, hydrogeology and soils;
 - e) Landscape and visual;
 - f) Noise and vibration;
 - g) Socio-economic;
 - h) Surface water quality and drainage; and
 - i) Traffic and transport;

- 13) The licensee should take into account the requirements of the regulations and HSE's expectations, in regard to the general content of the environmental statement, as described in Appendix 3. HSE recognises that BNFL has addressed the majority of these issues within the scoping report.

- 14) In addition, consideration should be given to the issues raised and comments made in Appendices 4 to 6. These are discussed further below.

Issues which do not need to be considered further in the environmental statement

- 15) It is HSE's opinion, based upon the information provided in the scoping report and the responses from consultees, that the licensee has adequately addressed the topics listed in Appendix 4 and justified why the environmental statement does not need to contain additional information or assessment beyond that provided in the scoping report.

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

- 16) Based upon its own analysis of the information provided in the scoping report and comments from consultees, it is HSE's opinion that the licensee should address certain detailed points on aspects discussed within the scoping report in the environmental statement itself. These points are listed at Appendix 5.

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

- 17) A number of other points are listed at Appendix 6. 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. The opinion, together with copies of consultees' comments will be displayed at HSE libraries and information centres listed in Appendix 7 and the public library given in Appendix 8. Alternatively, the opinion is available on the internet at <http://www.hse.gov.uk/nuclear/consult.htm>

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 Chapelcross Nuclear Power Station when this is provided by the licensee in due course under EIADR.

Contact

Ms Eileen Myers, Health and Safety Executive, Nuclear Safety Directorate, Room 412 St Peter's House, Balliol Road, Bootle, Merseyside, L20 3LZ; tel 0151 951 4938; fax 0151 951 4163; e:mail projectofficer.eia@hse.gsi.gov.uk

Consultees on the scoping report

Consultation bodies

HSE consulted 5 individuals in 3 organisations

Dumfries and Galloway Council
Scottish Environment Protection Agency
Scottish Natural Heritage

Other organisations

HSE consulted 41 individuals in 34 organisations

Association for Protection of Rural Scotland
British Trust for Ornithology
Campaign for Nuclear Disarmament
Centre for Environment, Fisheries and Aquaculture Science
Chapelcross / Solway and Watchdog Action group
Crown Estate (Scotland)
Defence Estates
Department of the Environment Food and Rural Affairs
Direct Rail Services
Dumfries and Galloway Constabulary
Dumfries and Galloway Fire Brigade
Food Standards Agency Scotland
Friends of the Earth
Greenpeace
Isle of Man Government Department of Agriculture, Fisheries and Forestry
Isle of Man Government Department of Local Government and the Environment
National Farmers Union
National Trust for Scotland
National Radiological Protection Board (and Committee on Medical Aspects of Radiation in the Environment)
Nuclear Free Local Authorities

Nuclear Safety Advisory Committee
Office of the Deputy Prime Minister
Ramblers Association
Republic of Ireland Department of the Environment and Local Government
Rhodia Pharma Solutions Ltd
Royal Society for the Protection of Birds (Scotland)
Royal Yachting Association
Rural Scotland
Scottish Ambulance Service
Scottish Enterprise
Scottish Office Department of Agriculture, Environment, and Fisheries
Scottish Wildlife Trust
The River Annan District Salmon Fishery Board
The Scottish Executive

Local Community Liaison Committee

HSE consulted 26 individuals in 16 organisations

Carlisle and District Primary Care Trust
Cumbria County Council
Cumbria and Lancashire Health Protection Unit
Dumfries and Galloway Constabulary
Dumfries and Galloway Council
Dumfries and Galloway Fire Brigade
Dumfries and Galloway Health Board
Enterprise and Lifelong Learning
Federation of Community Councils
Food Standards Agency
National Farmers Union (Scotland)
Rural Protection Agency
Scottish Ambulance Service
Scottish Office Department of Agriculture, Environment and Rural Affairs
Scottish Environment Protection Agency
Scottish Executive

Consultees who responded on the scoping report

HSE received 16 responses on the scoping report from 15 organisations

Campaign for Nuclear Disarmament

Committee on the Medical Aspects of Radiation in the Environment

Crown Estate

Dumfries and Galloway Council

Food Standards Agency Scotland

Isle of Man Government

Nuclear Safety Advisory Committee

Republic of Ireland (Department of the Environment and Local Government)

Rhodia Pharma Solutions Ltd

Royal Society for the Protection of Birds

Royal Yachting Association

Scottish Environment Protection Agency

Scottish Natural Heritage

The River Annan District Salmon Fisheries Board

The Scottish Executive

General content of the environmental statement

- 1) This Appendix describes the general content of the environmental statement as required by EIADR, together with comments from HSE on its expectations in this regard. HSE recognises that the licensee has addressed the majority of these issues within the scoping report.

Description of the project

- 2) EIADR requires that the environmental statement includes a description of the project, including in particular:
 - A description of the physical characteristics of the whole project and the land-use requirements during the construction and operational phases;
 - A description of the main characteristics of the production processes, for instance the nature and quantity of the materials used; and
 - An estimate, by type and quantity, of expected residues and emissions.

(EIADR, Schedule 1, paragraphs 1 and 8)

This means the statement should provide a clear picture of 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.

Options and reasons for option chosen

- 3) 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, as listed in paragraph 2 above.

Description of likely effects on the environment

- 4) 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).

- 5) 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

- 6) 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

- 7) 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).

Non-technical summary

- 8) The environmental statement should include a non-technical summary of the information provided (EIADR, Schedule 1, paragraphs 6 and 12).

Indication of any difficulties

- 9) The environmental statement should include an indication of any technical deficiencies or lack of know-how encountered in compiling the information (EIADR, Schedule 1, paragraph 7).

Issues which do not need to be considered further in the environmental statement

- 1) This Appendix lists the topics for which it is HSE's opinion that no additional information or assessment beyond that provided in the scoping report is needed in the environmental statement.
- 2) EIADR requires that the environmental statement must contain the data required to identify and assess the main effects which the project is likely to have on the environment. In particular, it should contain such of the information relating to the following, as is reasonably required to assess the environmental effects of the proposed project:
 - a) Population;
 - b) Fauna
 - c) Flora;
 - d) Soil;
 - e) Water;
 - f) Air;
 - g) Climatic factors;
 - h) Material assets (including architectural and archaeological heritage and landscape); and
 - i) The inter-relationship between the above factors (EIADR, Schedule 1, paragraphs 3 and 10).
- 3) In the scoping report, BNFL indicated that a number of aspects of the above topics would have a negligible affect on the environment. It is HSE's opinion, based upon the scoping report and the responses from consultees, that the licensee has adequately addressed the following topics and justified why no further information or assessment is required beyond that provided in the scoping report.

Air quality and climatic factors

- a) Impacts of climate change upon the site during decommissioning
- b) Acid gases or nuisance odours

Noise and vibration

- a) Potential impacts during care and maintenance (none identified)
- b) Traffic induced air borne vibration

Surface water quality and drainage

- a) Flooding risk

Traffic and transport

- a) Water transport of materials and waste associated with the decommissioning project

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

- 1) As a result of its own analysis, together with comments from consultees, it is HSE's opinion that the licensee should consider the detailed points, listed below, on the issues within the scoping report. Some of these detailed points are not explicitly described but may be mentioned within the scoping report. HSE recognises that, in some cases, significant amounts of information have been provided in the scoping report, but considers that further information is still required on some aspects. The level of detail provided in the environmental statement regarding issues covered by other legislation (Paragraph 34 of this Appendix), should be consistent with that described in Paragraph 35 of this Appendix.

Air quality and climatic factors

- 2) Regarding baseline data used in the environmental impact assessment, consideration should be given to:
 - a) Including characterisation and assessment of emissions which contribute to ozone depletion and global warming; and
 - b) Providing definitions for terms such as 'mean concentration' when used in the text.
- 3) The environmental impact assessment should include adequate consideration of the effects on air quality arising from discharges from waste plants and dust arising from demolition works.
- 4) Consideration should be given to the National Air Quality Standards timescales.
- 5) The scoping report identifies the possibility that fine dust particles will be dispersed over several kilometres. Consideration should be given to extending the assessment zone for dust emissions from decommissioning works beyond the 1 km zone around the site boundary.
- 6) Regarding monitoring of fugitive dusts, consideration should be given to:
 - a) Providing an indication as to whether dusts arising from decommissioning activities may contain radioactive material; and
 - b) Including assessment of how fugitive dust emissions will be monitored away from site and what mitigation measures will be employed to minimise dust impact.

Archaeology and cultural heritage

- 7) Regarding the proposed Royal Commission for Ancient and Historic Monuments in Scotland Level One survey, consideration should be given to:
 - a) Undertaking further consultation with appropriate bodies (such as Historic Scotland and the County Archaeologist) prior to completing the environmental impact assessment;
 - b) Including the results in the environmental statement; and
 - c) Using the results in the determination of appropriate mitigation measures.
- 8) Regarding the historical value of the power station itself, consideration should be given to:
 - a) Undertaking further consultation with appropriate bodies such as Historic Scotland and the County Archaeologist; and
 - b) Considering the value of components (such as early control panels) as museum exhibits.

Ecology

- 9) Consideration should be given to undertaking further field surveys during Spring / Summer periods to determine the extent of inhabitation of the study area by protected species such as reptiles, amphibians, bats, barn owls and badgers (this list is not exhaustive).
- 10) With regard to the managed amenity grassland within the site, consideration should be given to including a summary of the results of any assessment of biodiversity, which has been undertaken on behalf of the licensee. This should include a summary of any expert advice obtained on sustainable management.
- 11) Regarding the environmental effects of the decommissioning project on birds and related mitigation measures, consideration should be given to:
 - a) Noting that, under the terms of the European Birds Directive (79/409/EEC)³, Annex 1 species are given protection outwith designated areas (such as special protection areas). Assessment should, therefore, include potential for disturbance to Annex 1 species, particularly barnacle geese and whooper swans, outwith the special protection area, for example on grassland adjacent to the pipeline south of the site;
 - b) Carrying out an assessment of the impacts of the project on birds, such as Golden Plover and waterfowl, which use the fields adjacent to site for roosting and feeding;

³ Certain endangered, rare or vulnerable species are listed in Annex 1 of the European Communities Council Directive on the Conservation of Wild Birds (79/409/EEC), commonly referred to as the Birds Directive

- c) Noting that although October to April is the most sensitive time of year for birds, there may be use of the area close to the Solway Firth by birds outside this period. In particular, May, August and September can see peak movement of Ringed Plover and Oyster Catcher into the Solway Firth. Therefore, there may be a need to assess the use of these areas by feeding, roosting and migrating waterfowl; and
 - d) Undertaking further surveys to identify precise locations of high-tide roosts of wading birds, in relation to the effluent pipeline.
- 12) Regarding data collection, the following sources of information might prove useful:
- a) Wetland Birds Survey (WeBS) data held by British Trust for Ornithology;
 - b) The Wildfowl and Wetlands Trust; and
 - c) Survey results from the environmental impact assessment, which was carried out in relation to the upgrade of the nearby Annan Waste Water Treatment Works. Scottish Water holds the results.
- 13) Regarding the ecology of the River Annan, consideration should be given to:
- a) Assessing the option for modification or removal of Milnby weir, with regard to returning the river to a more natural state in terms of habitat, flow regimes and local landscapes. In particular, consideration should be given to the effects on Habitats Directive⁴ Annex 2 species such as salmonids and lampreys (both *Petromyzon* and *Lampetra*) and Local Biodiversity Action Plan (LBAP)⁵ species such as sea trout and brown trout. The assessment should also consider the effects of modification or removal on water abstraction, flooding risks and erosion;
 - b) Assessing the impact of the decommissioning project on the biodiversity of Gullielands Burn, due to surface water run off and assessing the possibility of opening up the culvert that carries the Burn, which may result in improved water quality and better habitat potential. The assessment should also consider the risk of increasing pollution of the river by doing so;
 - c) Consulting the Scottish Environment Protection Agency (SEPA) with regard to the requirements of the Water Framework Directive⁶ associated with the river;

⁴ European Communities Council Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (92/43/EEC, amended by Directive 97/62/EC), commonly referred to as the Habitats Directive, implemented in Great Britain by The Conservation (Natural Habitats, & c) Regulations 1994, SI 1994/2716 and The Conservation (Natural Habitats & c) (Amendment) Regulations 1997, SI 1997/3055.

⁵ The UK Biodiversity Action Plan (BAP) is the UK government's response to the Convention on Biological Diversity, signed at Rio in 1992. It includes a number of Species Action Plans (SAPs) and Habitat Action Plans (HAPs) aimed at conserving and enhancing biological diversity in the UK. The aims of the national BAP are met by the implementation of SAPs and HAPs at a county level within Local Biodiversity Action Plans (LBAPs). A Local Biodiversity Action Plan (LBAP) has been produced for Dumfries and Galloway and action plans for several species and habitats have been produced.

⁶ Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for community action in the field of water policy.

- d) Noting that Chub and Grayling are also significant fish species, particularly below the weir;
 - e) Noting that the 5 year averages of salmon and sea trout caught on the river are currently 911.6 and 2146.2 respectively;
 - f) Noting that, though the assumption that rod and line angling exploits 40% of stock entering the river is probably accurate for early fish, the figure for later running salmon could be as low as 5%; and
 - g) Assessing the impact of avoiding sensitive times for both migratory fish and the angling times for such fish, during decommissioning works that might affect the River Annan.
- 14) The licensee should consult Scottish Natural Heritage and the Scottish Environment Protection Agency regarding the implications of Regulation 48 of The Conservation (Natural Habitats, &c.) Regulations 1994⁷ in relation to areas that are given special protection under European Law. These include the candidate Special Areas of Conservation⁸ (cSACs) of the Solway Firth and Raeburn Flow and the Special Protection Area (SPA)⁹ of the Upper Solway Flats and Marshes. If necessary, an appropriate assessment should be undertaken of the effects of the decommissioning programme on the protected areas. The assessment should be provided as an appendix to the environmental statement.
- 15) With regard to the inner Solway Firth, although this is not a clearly defined geographical area, consideration should be given to referencing it to the boundaries of the Upper Solway Flats and Marshes Site of Special Scientific Interest (SSSI)¹⁰, Ramsar site¹¹ and Solway Firth SPA and cSAC all of which coincide. The western edge of the designated site is a line between Dumbill Point in Cumbria to the sand banks south of Sandyhills and Craigneuk Point, Kirkcudbrightshire.

⁷ The Conservation (Natural Habitats, &c.) Regulations 1994; SI 1994/2716. (as amended by The Conservation (Natural Habitats, &c.) (Amendment) Regulations 1997, SI 1997/3055). Regulation 48 requires that an appropriate assessment be carried out on any plans or projects, which are likely to have a significant affect on a European site, being either a Special Protection Area (SPA) or candidate Special Area of Conservation (cSAC).

⁸ Areas containing rare or vulnerable habitats or species, which are of European Union interest, can be designated as Special Areas of Conservation (SACs) under the Habitats Directive (92/43/EEC as amended by 97/62/EC). Prior to being ratified by the European Commission, these areas are referred to as candidate SACs (cSACs).

⁹ European Communities Council Directive on the Conservation of Wild Birds (79/409/EEC), commonly referred to as the Birds Directive. Areas which support certain endangered, rare or vulnerable species (found in Annex 1 of the Directive) or regularly occurring migratory birds of European importance can be designated as SPAs under the Directive.

¹⁰ Under the Wildlife and Countryside Act 1981 as amended by Schedule 9 to the Countryside and Rights of Way Act 2000, the Joint Nature Conservation Committee (JNCC) has a duty to notify areas of land which it considers to be 'of special interest by reason of any of its flora, fauna, or geological or physical features'.

¹¹ Designated under the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat.

- 16) With regard to the ecology of the Solway Firth, consideration should be given to:
- a) Noting that the traditional fishery for salmon also uses poke and stake nets in the inner Solway Firth; and
 - b) Including in the assessment the possibility that cessation of warm water outflows to the Solway Firth whilst, probably being beneficial for the natural biodiversity, may have a damaging effect on the commercial fisheries in the area. Haaf, stake and poke nets catch a number of sea bass each year as a by catch to their salmon and sea trout fisheries. Sea bass are near their northern limit in the Solway so the current warm water discharges may increase the survival of juveniles.
- 17) Regarding the environmental effects of the decommissioning project on protected species identified within the study area, consideration should be given to:
- a) Giving an indication of how effects will be monitored; and
 - b) Including information as to how mitigation of the effects will be addressed.

Geology, Hydrogeology and soils

- 18) Consideration should be given to:
- a) Assessing the potential effects of blasting on groundwater quality and soil contamination. The assessment should include whether blasting is to be used, and if so, its affects on mobility of contaminants in the ground and the vulnerability of local geology to disturbance;
 - b) Assessing the potential impacts arising as a result of changes in recharge and groundwater levels, such as risk of flooding, mobilisation of existing groundwater contamination (including that associated with the removal of buildings from site) or wetland derogation. This list is not exhaustive. The assessment should take into account the relatively high level of rainfall and fast moving surface waters in the area;
 - c) Providing further evidence (for example the results of soil and groundwater sampling) to support the claim that there is not expected to be significant contamination of the ground or groundwater from operations at Chapelcross;
 - d) Including a summary of the results of the survey work which, the scoping report indicates, is currently underway, to locate and characterise contaminated land on site;
 - e) Including a summary of the site specific strategy for dealing with contaminated land which is referred to in the scoping report; and
 - f) Assessing whether removal of effluent pipelines may result in contamination of soil or groundwater.

Landscape and visual

19) Consideration should be given to:

- a) Identifying the zone of visual influence (ZVI) on appropriate photomontages, diagrams or maps;
- b) Undertaking further consultation with appropriate individuals and bodies, such as the County Landscape Architect and Scottish Natural Heritage, regarding the selection of illustrative view-points to be included in the assessment, sensitivities and receptors within the ZVI, and the development of appropriate mitigation measures;
- c) Using interim landscaping to mitigate the environmental impact of the works over the decommissioning period; and
- d) Including a description of potential changes to reactor height and re-cladding (temporary and permanent), together with an assessment of the related visual impacts.

20) With respect to National Scenic Areas (NSA), consideration should be given to:

- a) Noting that the NSA referred to west of the site should be cited as the Nith Estuary NSA; and
- b) Extending consideration to the 5 designed landscapes listed under the Inventory of Historic Gardens and Designed Landscapes which lay within a 30km radius; Raehills, Castlehill, Kinmount, Arbigland, and Cowhill Tower.

Noise and vibration

21) Consideration should be given to:

- a) Assessing the impacts from any potential blasting operations; and
- b) Providing baseline data for on-site noise levels.

Socio-economic

22) Consideration should be given to:

- a) Including the work of the Corridor Regeneration Strategy for Gretna, Lockerbie and Annan in the assessment;
- b) Further assessing whether other areas of Scotland and England (for Example, Carlisle) should be included in the study area;
- c) Further assessing whether postal region DG11 should be included in the study area;
- d) Assessing the impact of shift working on the local population; and
- e) Assessing the impact of decommissioning on amenity facilities and land use.

Surface water quality and drainage

- 23) Consideration should be given to:
- a) Assessing the option for modification or removal of Milnby weir, with regard to returning the river to a more natural state in terms of habitat, flow regimes and local landscapes. The assessment should also consider the effects of modification or removal on water abstraction, flooding risks and erosion;
 - b) Assessing the physical impacts on watercourses due to cessation of extraction of water from the River Annan. The assessment should include consideration as to whether cessation may cause changes in rates of erosion and / or deposition along the river and related subsequent impacts;
 - c) Amending the text to reflect the fact that radioactive surveillance programmes for aquatic and terrestrial foods is carried out in Scotland by the Scottish Environment Protection Agency;
 - d) Including baseline data regarding thermal pollution; and
 - e) Assessing the potential for pollution problems associated with run-off from bare ground, taking into account the existing drainage network and including an assessment of whether landscaping of the area may reduce such impacts during the care and maintenance period.

Traffic and transport

- 24) Consideration should be given to the effects on navigation in the Firth of Seafield, caused by removal of the effluent discharge pipelines, including:
- a) Whether the outfalls are below the high water mark; and
 - b) Whether there may be a requirement for notices, markings, or lighting.

Definition of the project

- 25) Consideration should be given to ensuring that the decommissioning project is clearly defined in the environmental statement, in terms of areas of site and buildings which are to be included.

Designated sites

- 26) Regarding the list of designated sites within 10 km of the power station, consideration should be given to providing an explanation as to why each designated site has been protected. The reasons for designation may assist the assessment of potential impacts: for example, a site designated for a specific species or a particular type of ecosystem may be more sensitive to certain types of impact than other sites designated for their geological interest.

Secondary developments

- 27) The environmental statement should provide a clear picture of the number and purpose of buildings and facilities required to be constructed during the project, together with a summary of the resulting environmental impacts and the need for permissions under Town and Country Planning legislation. Consideration should be given to:
- a) Providing indications of likely size, location, planning status and mitigation measures associated with the proposed waste management facility and intermediate level waste store;
 - b) Noting that processing of low level waste may reveal intermediate level waste and including the latter when considering designs for the waste management facility; and
 - c) Providing a clear indication of any ancillary buildings or facilities which are likely to be required during the decommissioning project.

Radioactive discharges

- 28) Regarding radioactive discharges, consideration should be given to:
- a) Providing clarification regarding the number of effluent discharge lines present (either in use or redundant) and which will be included in the project;
 - b) Providing indicative radioactive discharge data for the works phase;
 - c) Indicating outline radioactive discharge profiles for the care and maintenance and the site clearance phases;
 - d) Including clear definitions of the terms 'free release waste', 'low level waste' and 'intermediate level waste';
 - e) Considering the options for processing radioactive waste (for example super-compaction of ILW);
 - f) Providing a summary of measures to prevent spillages or leaks of radioactive material into the environment, together with reference to the legislation which covers such matters;
 - g) Taking into account the fact that some intermediate level waste will decay to become low level waste during the full period of the decommissioning project; and
 - h) Assessing the effects of long-term storage of intermediate level waste, arising from the Chapelcross decommissioning project, on the Sellafield site (including a determination as to whether existing capacity of the Sellafield facility is adequate).

Treatment of wastes

- 29) Consideration should be given to:

- a) Including in the assessment, the potential for hazardous wastes to also be radioactive;
- b) Providing estimates of the quantities of hazardous wastes, and likely disposal routes;
- c) Including a summary of any related waste management licensing requirements;
- d) Providing information regarding the potential for recycling of waste materials; and
- e) Identifying potential discharges arising from waste treatment processes.

Mitigation measures

- 30) The environmental statement should include proposed mitigation measures (rather than possible mitigation measures).

Impact assessment criteria

- 31) The environmental statement should include explanations as to how impact assessment magnitude and significance have been determined for assessed impacts.

Baseline year and baseline data

- 32) The environmental statement should provide justification for the choice of 2000 as the baseline year. In addition, justification should be provided for the use of baseline data from the 1980s and early to mid 1990s.

Care and maintenance period

- 33) The environmental statement should include an indication of monitoring measures (for example regarding levels or mobilisation of groundwater contamination and drainage of surface water), which will be in place during the care and maintenance period.

Issues covered by other legislation

- 34) A number of issues are covered by other existing legislation, and these will continue to be enforced under this other legislation. These issues include:
 - a) Continuity of site management;
 - b) Site security and integrity, 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;
 - h) Integrity of flood defences;
 - i) Release of radioactive material and non-radioactive wastes; and
 - j) Secondary developments and re-cladding of reactor buildings will be subject to planning legislation.
- 35) The environmental statement should include reference to the above and sufficient detail to give a clear picture of the scope of issues involved and their relation to the environmental impact assessment. However, where appropriate, reference should be made to the relevant legislation and related submissions to the regulatory authorities, where the licensee has provided or will provide greater detail.

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 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;
 - b. Using the proposed 100 year delay before site clearance begins to consider the options for ecological enhancement of the area;
 - c. Noting that the ecology of the Solway Firth and its environs gives an opportunity to demonstrate a clear improvement of ecological conditions due to decommissioning;
 - d. 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 with a view to benefiting the community;
 - e. 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;
 - f. Providing a clear indication as to whether the project is likely to have significant effects on the environment of another European Economic Area State;
 - g. Ensuring that the policy framework described includes up to date information regarding any relevant central government policy;
 - h. Using photographs, figures and diagrams where appropriate to clarify text. Examples of such include:
 - i. Use of photomontage to demonstrate the phased demolition of structures;
 - ii. A map showing the locations of environmental receptors such as designated habitats and off-site noise monitoring locations; and
 - iii. Indication of facilities, such as footpaths, on diagrams showing the identified Zones of Visual Influence; and

- i. Ensuring that potential benefits to the environment arising from the decommissioning project are adequately addressed (such as the long term affect on visual impact due to removal of the cooling towers).

HSE Library and Area Offices

Health and Safety Executive
Magdalen Library
Magdalen House
Trinity Road
Bootle
L20 3QZ
Telephone: 0151 951 4382

Health and Safety Executive
Rose Court
Southwark Bridge
London SE1 9HS
Telephone: 020 7717 6104

Health and Safety Executive
Pegasus House
375 West George Street
Glasgow
G2 4LW
Telephone: 0141 275 3000

Public library displaying the Pre-Application Opinion

Annan Library
Charles Street
Annan
Dumfriesshire
DG12 5AG
Telephone: 01461 202809

ANNEX 2 Consultees on the environmental statement

Consultation bodies

HSE consulted 9 individuals in 3 organisations

Dumfries and Galloway Council
Scottish Environment Protection Agency
Scottish Natural Heritage

Other organisations

HSE consulted 48 individuals in 38 organisations

Association for Protection of Rural Scotland
British Trust for Ornithology
Campaign for Nuclear Disarmament
Centre for Environment, Fisheries & Aquaculture Science (CEFAS)
Chapelcross/Solway and Watchdog Action Group
Civil Aviation Authority
Committee on the Medical Aspects of Radiation in the Environment (COMARE)
Crown Estate (Scotland)
Defence Estates
Department of Agriculture Fisheries & Forestry
Department for the Environment Food and Rural Affairs (DEFRA)
Direct Rail Services
Dumfries and Galloway Constabulary
Dumfries and Galloway Fire Brigade
Food Standards Agency
Greenpeace
Health Protection Agency (formerly National Radiological Protection Agency)
Isle of Man Government, Department of Local Government and the Environment
Ministry of Defence Estate Organisation
National Farmers Union
National Trust for Scotland
National Air Traffic Service Plc (NATS Plc)

Nuclear Free Local Authorities
Nuclear Safety Advisory Committee (NuSAC)
Office of Civil Nuclear Security (OCNS)
Office of the Deputy Prime Minister
Ramblers Association
Republic of Ireland, Department of the Environment and Local Government
Rhodia Pharma Solutions Ltd
Royal Society for the Protection of Birds (Scotland)
Royal Yachting Association
Scottish Ambulance Service
Scottish Enterprise
Scottish Executive Environment and Rural Affairs
Scottish Water
Scottish Wildlife Trust
The River Annan District Salmon Fishery Board
The Scottish Executive

Local Community Liaison Committee

HSE consulted 31 individuals in 19 organisations

Cumbria and Lancashire Health Protection Unit

Cumbria County Council

Department for the Environment Food and Rural Affairs (DEFRA)

Dumfries and Galloway Constabulary

Dumfries and Galloway Council

Dumfries and Galloway Fire Brigade

Dumfries and Galloway Health Board

Enterprise and Lifelong Learning

Federation of Community Councils

Food Standards Agency

Government Office North West

Members of Parliament

Member of the Scottish Parliament

National Farmers Union (Scotland)

Radiological Protection Agency

Scottish Ambulance Service

Scottish Environment Protection Agency

Scottish Executive Environment and Rural Affairs Department

The Scottish Executive

ANNEX 3 Consultees who responded on the environmental statement

HSE received 18 responses on the environmental statement from 15 organisations

Civil Aviation Authority

Committee on the Medical Aspects of Radiation in the Environment (COMARE)

Dumfries and Galloway Constabulary

Dumfries and Galloway Council

Food Standards Agency Scotland

Health Protection Agency, Radiation Protection Division (formerly National Radiological Protection Board)

Isle of Man Government, Department of Local Government and the Environment

Nuclear Free Local Authorities

Republic of Ireland Department of the Environment and Local Government

Rhodia Pharma Solutions Ltd

Royal Yachting Association

Scottish Environment Protection Agency

Scottish Natural Heritage

The River Annan District Salmon Fishery Board

The Scottish Executive

ANNEX 4 Letter requesting evidence to verify information in the environmental statement

Mr A J Shuttleworth
The Company Secretary
Magnox Electric Ltd
1100 Daresbury Park
Daresbury
Warrington
WA4 4GB

Your Ref: CXA 22703
File Ref NUC 157/15/1 P1 E70
Unique N° CRX 71243R
Date 17th June 2005

Dear Mr Shuttleworth

Magnox Electric Ltd, CHAPELCROSS POWER STATION

NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR DECOMMISSIONING) REGULATIONS 1999

REQUEST FOR EVIDENCE TO VERIFY INFORMATION IN THE ENVIRONMENTAL STATEMENT; REGULATION 10(9)

I refer to the letter from Mr Howard dated 1 October 2004, applying for consent to carry out a decommissioning project at Chapelcross Power Station under regulation 4(a) and submitting an environmental statement under regulation 5 of the above Regulations, and Ms Taylor's acknowledgement dated 8 October 2004. 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 evidence is required to verify information in the environmental statement provided by Magnox Electric Ltd for Chapelcross Power Station under regulation 5, and for the purposes of the powers under regulation 10(9) of the above Regulations hereby requests that Magnox Electric Ltd provide evidence as specified in the Appendix to this letter.

Yours sincerely

Mr P W Snelson
HM Acting Superintending Inspector
Nuclear Installations Inspectorate

Copies: Mr M Travis
Ms G Crockett

APPENDIX – EVIDENCE TO BE PROVIDED

1. The environmental statement includes consideration of the environmental impacts on ground and groundwater from the mobilisation of existing contamination, or other contaminants that might arise during the decommissioning process. Evidence is requested to verify that further development of methods of working, risk assessment and characterisation surveys will take place before the commencement of certain work activities planned in the decommissioning programme. In particular, evidence is requested regarding:

- a. the impact on groundwater of using crushed concrete as infill following the demolition of cooling towers;
- b. that the risk of mobilisation of existing ground contamination (and resulting pollutant linkage pathway leading to further ground or groundwater contamination) resulting from ground-borne vibration due to demolition of the cooling towers is negligible;
- c. the management of active effluent pipelines.

2. Evidence is requested to verify that Magnox Electric Ltd have considered options for the management of and or disposal of tritium contaminated material to ensure that any potential impact to the environment is not significant.

ANNEX 5 Evidence to verify information in the environmental statement

Reasons for requesting evidence to verify information in the environmental statement

1. A brief explanation is given of the reasons why HSE considered it necessary to request evidence to verify information in the environmental statement.
2. The environmental statement included information on the demolition of the cooling towers by the rapid implosion method, and the subsequent use of the cooling tower material as in-fill in the cooling tower basins. However it was felt that evidence was required to support the information provided in the environmental statement in particular to verify that full consideration had been given to the impact on groundwater of the effects of the demolition process and the use of the cooling tower material as in-fill.
3. The environmental statement describes options for the decommissioning of the active effluent pipeline. Further evidence was requested to verify that all options would be fully explored to ensure that potential effects on the environment are negligible before a decommissioning option is chosen.
4. The environmental statement includes information on waste management, including the disposal of tritium contaminated waste material. It was felt that evidence was required to explain further the origins of the contamination and the method and management of its disposal.

Reasons for not seeking further clarification

5. It was HSE's opinion that the evidence together with the environmental statement provided sufficient information regarding the impact on groundwater from the mobilisation of existing contamination, and other contaminants that might arise during the demolition of the cooling towers and in-fill of the bases.
6. The licensee has undertaken to implement mitigation measures to reduce the risk of significant adverse environmental impacts relating to ground and groundwater, including further development of methods of working, risk assessment and characterisation surveys before the start of work activities which might cause disturbance and mobilisation of existing contamination and also the management of the active effluent pipeline. This will take place in consultation with relevant regulators.
7. With regard to the disposal of tritium contaminated material, it was HSE's opinion that the evidence together with the environmental statement provided sufficient information to determine that the preferred disposal option is appropriate. The licensee has undertaken to consult with relevant regulators regarding this matter.
8. Should any change to the project be required due to the results of surveys (or for any other reason), that may have significant adverse effects on the environment, regulation 13 of EIADR will apply. The licensee will have to apply to HSE for a determination as to whether an environmental impact assessment is required and if so, the licensee will be required to apply for consent for the change and submit an environmental statement that will be subject to public consultation. Work on the decommissioning project shall not continue until this process is complete.

ANNEX 6 Reasons for topics not pursued for evidence or 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. The NDA will have a role to play in future decommissioning timetables and strategies.

2. 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.

3. 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 Civil Aviation Authority. NIA65 covers emergency arrangements.

4. Packaging and long-term storage of ILW:

Safety aspects of packaging and long-term storage of ILW are covered by NIA65, RSA93, Nirex (and the NDA).

5. Disposal of LLW:

Disposal of LLW (including radioactively contaminated asbestos) is covered by NIA65, RSA93 and IRR99. LLW is currently disposed of to Drigg facility. Should future circumstances result in the need for changes to the LLW disposal route and thus to the decommissioning project, then regulation 13 of EIADR will apply. If the changes or extension may have a significant adverse effect on the environment, then under regulation 13 of EIADR, Magnox Electric Ltd would have to apply to HSE for consent to carry out that change or extension to the decommissioning project, and prepare an environmental statement on that change or extension which would be subject to public consultation.

6. Milnby Weir:

This is owned by Scottish Water and does not form part of the decommissioning programme. However the Station intends to undertake environmental studies to look at the impact of various options relating to the removal or otherwise of the weir, and to include this in the environmental management plan. Scottish Water is also conducting a study into the environmental impacts of various options. The licensee, when deciding which option to take will take public opinion into consideration. The impact on abstraction capability will be considered and discussed with relevant parties. If the weir does become part of the decommissioning project and work is likely to have significant adverse impacts, then regulation 13 of the EIADR will apply to the project.

7. Effects on fisheries in Solway Firth:

The fisheries were not specifically included in the environmental statement as it was concluded during the assessment process that decommissioning activities would result in no significant impact on them.

8. Landscape and visual:

Re-cladding of reactors requires planning permission and therefore requires discussion and agreement with the local planning authority. Mitigation proposals for this and other identified effects on landscape and visual will be included in the environmental management plan.

9. Socio-economic impact of reduction in workforce numbers:

The environmental statement outlines the assessed impacts (direct and indirect) relating to the reduction in workforce and outlines the mitigation measures to be implemented. In addition, the statement discusses the likely impact of wider initiatives such as the formation of The Corridor Regeneration Strategy (CoReS) Steering Group, and the support of Magnox Electric Ltd towards this. The NDA is required, under the Energy Act 2004, to consider giving encouragement and other support to activities that benefit the socio or economic life of communities living near designated reactor sites, installations and facilities or that produce other environmental benefits for such communities.

10. Air quality impact from fugitive dust emissions:

The Chapelcross air quality sections assess fugitive dust emissions associated with all decontamination activities. Emphasis in the environmental statement is on fugitive dust from the demolition of the cooling towers as this will be the most significant source.

11. Habitat enhancement measures:

Magnox Electric Ltd will develop biodiversity action plans that will be included in the environmental management plan, and have also undertaken to consult SEPA and NDA regarding habitat enhancement measures.

12. Tritium discharges:

Evidence has been provided to clarify the origin and management of tritium contaminated waste. Radioactive discharges that will also include aerial discharges of tritium are regulated by SEPA under the RSA93.

1. ANNEX 7 Consent and conditions

Decommissioning Project Consent No.1

September 2005

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)

CHAPELCROSS 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 project¹² 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 site, and clear the site, subject to the conditions under regulation 8(4) attached.

Dated:

For and on behalf of the
Health and Safety
Executive

Signed

Dr S. L Creswell
A person authorised to act in
that behalf

¹² 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)

CHAPELCROSS POWER STATION

Condition 1

The project¹³ shall commence before the expiration of five 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 evidence to verify information in the environmental statement, provided under regulation 10(9), the environmental management plan shall:

- a. list the mitigation measures that are already identified in the environmental statement and evidence submitted to verify information in the environmental statement;
- 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:

¹³ Project as defined in regulation 2

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

For and on behalf of the
Health and Safety Executive

Signed

Dr S. L. Creswell
A person authorised to act in
that behalf

ANNEX 8 Summary of environmental benefits and detriments and mitigation measures

A summary of the benefits and detriments of the environmental impacts identified by Magnox Electric Ltd is given here. The licensee has undertaken to implement any mitigation measures identified in the environmental statement (and will be required to do so in accordance with the environmental management plan referred to in the conditions attached to the consent).

1. Socio-economic:

Impacts were assessed for care and maintenance preparations; care and maintenance; final site clearance; and residual impacts following site clearance. A total of sixty four topic areas were assessed. There was one key significant adverse impact identified relating to permanent loss of existing Station employment during the care and maintenance period. There were six topic areas with long-term, adverse, reversible impacts, relating to employment levels at the site and in the surrounding area. Of these impacts, four were identified as major, one as moderate, and one as slight. The mitigation measures identified in the environmental statement may reduce the magnitude of these and it is expected that additional mitigation will result from the development of an economic regeneration strategy. Mitigation measures include:

- a. Opportunities for re-employment on site for decommissioning activities;
- b. Potential for relocation packages to be offered to some staff by Magnox Electric Ltd;
- c. Magnox Electric Ltd supported the formation of The Corridor Regeneration Strategy (CoReS) Steering Group, which comprises various local representatives from private sector, public agencies and also from Magnox Electric Ltd, to implement the economic regeneration strategy;
- d. CoReS have identified thirteen priority opportunities over the next five years that will drive economic change, including new job opportunities arising from investment projects identified, and potential major development opportunities;
- e. Magnox Electric Ltd will encourage the use of locally sourced materials and services where practicable.

2. Ecology:

Six major topic areas were assessed for care and maintenance preparations and three topic areas for final site clearance (nine in total). There were two topic areas where there was found to be significant, long term, adverse effects (the impact on bats and Peregrines during each of the two assessed phases of the project) and one that was found to be a significant, short term, adverse effect (the impact on aquatic ecological receptors during each of the two phases). However, the environmental statement identified mitigation measures, which if implemented will render all of the above effects not significant. Mitigation measures are:

- a. A bat survey will be undertaken prior to demolition of buildings containing potential roosts / hibernacula and where necessary, further mitigation will be incorporated. These might involve the blocking of any entrances to roosts / hibernacula in areas that will be cleared (under licence from Scottish Executive) and the provision of alternative roosts / hibernacula. If bat roosts/hibernacula are present, mitigation will be agreed with Scottish Natural Heritage;
- b. Suitable nest sites will be checked prior to any demolition works that are carried out during the breeding season (March – July). If nesting Peregrine are present, demolition works that could impact on them will be postponed until after the breeding season; and
- c. Mitigation concerning the potential for release of contaminants into the aquatic environment will be controlled through the adoption of best management practices. Further detail is included in the surface water quality and drainage section (paragraph 4 below surface water quality and drainage).

3. Landscape and visual:

The assessment concluded that in the long term the decommissioning project will provide considerable benefit to the landscape and visual amenity of the area. For each phase of decommissioning, twenty five character areas and nineteen viewpoints were considered for impact. For the care and maintenance preparation phase; increased activity on and around the site resulted in short to medium-term key significant adverse impacts to four character areas, and to ten viewpoints. For the care and maintenance phase; no adverse impacts were identified, with six being assessed as having key significant benefits, with the remainder as either significant benefits or not significant. For the final site clearance phase; the short to medium term re-introduction of industrial activity resulted in two key significant adverse and two significant adverse impacts to character areas, and six key significant adverse impacts to viewpoints. Mitigation is considered as follows:

- a. Care and maintenance preparation; mitigation measures include phased demolition of site buildings, careful design and positioning of site/construction lighting, use of recessively coloured cladding to reactors, careful positioning of contractors compound, use of temporary screen bunds, early reinstatement of land where safe to do so, and where practicable the use of small scale equipment;
- b. Care and maintenance; mitigation measures are not necessary;
- c. Final site clearance; final decommissioning of the power station would remove a prominent intrusive element from the landscape.

4. Surface water quality and drainage:

Six topic areas were assessed for the care and maintenance preparation, and final site clearance phases. One has a moderate benefit for aquatic ecology, and one was considered not to have a significant impact. Four impacts were significant and assessed as moderate, short to medium term, adverse effects

(relating to release of turbid water, sediments and spills). However, the environmental statement identified mitigation measures, which if implemented will render all of the above effects not significant. Mitigation measures include:

- a. Adoption of best practice as outlined in SEPA Pollution Preventing Guidance notes, and adherence to industry guidance, such as; buffer strips next to water courses, cut off drains, sumps for collecting turbid site drainage, minimisation of soil stockpiling, use of geotextile filters and bunds / cut off drains within close proximity to water courses;
- b. Wheel wash for traffic leaving site;
- c. Sweeping of roads close to the decommissioning site;
- d. Protective butts on bridge crossings to prevent turbid water entering watercourses;
- e. Compliance with relevant legislation;
- f. Blasting of towers to be done in such a way that the towers collapse inwards, and away from Gullielands Burn;
- g. Designated areas for storage and handling of fuel and non radioactive chemicals, and emergency spill response planning.

5. Traffic and transport:

The magnitude and impact of changes in traffic are considered. Two topic areas were considered for each of the phases of decommissioning including; care and maintenance preparations, care and maintenance, intermediate level waste package removal and final site clearance. Within each topic area, seventeen roads/sites were assessed. Due to an increase in HGVs, and a reduction in cars during the care and maintenance preparation phase, slight either positive or adverse medium term impacts have been identified for the road network and site. Three major adverse medium term impacts have been identified regarding the increase in HGVs during the final site clearance phase on the road network and on site. There were no key significant, or significant impacts identified for the decommissioning project.

Traffic flows from Chapelcross Power Station during all phases of the decommissioning process will be reduced. No mitigation measures are therefore thought necessary. Wheel washing of HGVs before leaving site, and sweeping roads close to the site will reduce mud on the roads.

6. Noise and vibration:

Two major topic areas were assessed for the care and maintenance preparations and two for final site clearance phase (relating to the effects of construction work and transport vehicles). For both phases, the noise and vibration during construction work had significant, adverse, short-term impacts. However, the environmental statement identified mitigation measures (adoption of good working practices to ensure minimisation of noise and vibration during works), which when implemented will render both of the above effects not significant.

7. Geology, hydrogeology and soils:

One topic area (contaminated soils and groundwater, including effects on existing water supplies, groundwater resources, land areas affected) was considered for the care and maintenance preparation and final site clearance phase, with five impacts assessed for care and maintenance preparation, and six for final site clearance. Of these four were identified as potentially key significant, up to major adverse; six were identified as potentially significant up to major adverse; and one as key significant up to moderate benefit. The effects related to disturbance of existing ground contamination, temporary storage of materials and spills or leaks. However, the environmental statement and evidence identified mitigation measures, which if implemented will render all of the above effects not significant. Such mitigation measures include:

- a. Appropriate review of existing survey data relating to contaminated land prior to commencing any work which might result in disturbance of contaminated ground;
- b. Soil, waste and water testing prior to and during work and appropriate management of any contaminated material found during sampling;
- c. Bunding, appropriate handling protocols, contingency plans for spills; and
- d. Development of a strategy to manage contaminated land, including the development of method statements and risk assessments for each project within the decommissioning programme.

8. Air quality and climatic factors:

Two major topic areas were assessed (relating to traffic flow and fugitive dust) for each of the three phases of decommissioning (six in total). No adverse significant or key significant effects were found.

9. Archaeology and cultural heritage:

There are no surviving features of archeological interest within the power station site, other than the station itself. It is felt that no further assessment is appropriate. However, it was recommended that the Royal Commission on Historical and Ancient Monuments in Scotland carry out a Level One survey before decommissioning commences. In addition, the licensee has undertaken to consider appropriate means of retaining the heritage interest associated with the design, layout, technology and operation of the power station itself and consultation is ongoing with Scottish Natural Heritage and Solway Heritage to determine the most appropriate way in which to preserve the legacy of Chapelcross.

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