BRADWELL SITE

ENVIRONMENTAL MANAGEMENT PLAN

2018/2019

(As required by the conditions attached to the consent to decommission Bradwell Site under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended))

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Executive Summary

In April 2002 Magnox Electric plc applied for consent to decommission Bradwell Nuclear Power Station under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999.

Consent was granted by the Health and Safety Executive (HSE)(now Office for Nuclear Regulation) in December 2003. There were six conditions attached to the consent, most of the conditions related to the preparation and maintenance of an Environmental Management Plan.

This document is the fifteenth issue of the Bradwell Environmental Management Plan. It provides an update on the details of the agreed mitigation measures to prevent, reduce and, if possible, offset any significant adverse environmental effects of the decommissioning work. A revised version of this document will be re-issued annually as agreed with the Office for Nuclear Regulation.

As Closure Director for Bradwell Site, I look forward to the continuing successful decommissioning project and on behalf of Magnox Ltd, I give my commitment to minimising any adverse effect on the environment as a consequence of our decommissioning operations.

Bob Nichols, Closure Director, Bradwell

February 2018
Contents

1. Introduction ........................................ 5
2. Scope of the Environmental Management Plan ........ 6
3. The Site and Surrounding Area ......................... 8
4. Implementation of the Environmental Management Plan 15
5. Changes to the Environmental Management Plan ...... 20
6. Distribution of the Environmental Management Plan ... 22

Appendix A. Decommissioning Consent .................. 23
Appendix B. Site Procedures for Reducing Impact ........ 26
Appendix C. Stakeholder Engagement .................... 28
Appendix D. Land Quality Assessment Form ............... 29
Appendix E. Principles for a Travel Plan .................. 30

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1. Introduction

Bradwell site (hereafter referred to as ‘Bradwell’) ceased power generation on 31 March 2002. Under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended) consent to carry out any dismantling or decommissioning work at Bradwell had to be granted before any work commenced. Therefore, in April 2002, the then holders of the Bradwell Nuclear Site Licence (Magnox Electric plc) applied to the Health and Safety Executive (HSE) (now Office for Nuclear Regulation (ONR)) for the consent to decommission Bradwell. The application was accompanied by an environmental statement as required by the Regulations.

Following a public consultation on the environmental statement, the HSE requested further information that was subsequently provided by the licensee. The consent to decommission Bradwell was granted in December 2003, subject to six conditions. The conditions attached to the consent relate to mitigation measures to prevent, reduce and if possible, offset significant adverse environmental effects of the decommissioning project. This is managed by the preparation and maintenance of an Environmental Management Plan (EMP). This issue of the EMP is structured in a way to clearly demonstrate how Bradwell meets the requirements of those conditions (listed in Appendix A). Other supporting information which may be of interest to the public, but is not directly required by the consent conditions, is located in the Appendices (e.g. stakeholder engagement, principles of a travel plan etc).

A detailed decision report was prepared by the HSE in 2003, describing the content of the conditions attached to the consent, the main reasons and considerations for the decision. The report can be accessed at the ONR website:

www.onr.org.uk/bradwell.pdf

or write to:

Office for Nuclear Regulation
Building 4
Redgrave Court
Merton Road
Bootle
Merseyside
L20 7HS
Tel: 0151 951 4000
email:EIA.Team@onr.gsi.gov.uk

Any queries relating to decommissioning activities at Bradwell or requests for copies of this EMP should be addressed to:

The Closure Director
Bradwell Site
Bradwell-on-Sea
Southminster Essex
CM0 7HP
2. Scope of the Environmental Management Plan

The EMP details Bradwell’s environmental performance and provides examples of mitigation measures demonstrated over the past year. It also determines potential future environmental impacts and ensures that mitigation measures are identified, amended and implemented as necessary.

Geographical Scope

The project area at Bradwell is contained within the Nuclear Licensed Site boundary covering approximately 20 hectares. The site lies approximately 30 km due East of Chelmsford and 2.5km from the Northeast corner of the Dengie peninsula (Figure 1). Magnox has control over approximately 20 hectares on the nuclear licensed site.

![Figure 1: Location of Bradwell site](image)

Duration

Magnox has adopted a generic decommissioning strategy the Magnox Optimised Decommissioning Programme (MODP) which is being applied at the Bradwell site. This deferred site clearance strategy, or 'Safestore' strategy as it is sometimes called, consists of three main phases; Care and Maintenance Preparations, Care and Maintenance and Final Site Clearance. A summary of each phase for Bradwell is provided below.

Care and Maintenance Preparations (C&MP)

During this phase, all of the non-radioactive plant and buildings on the site are dismantled; the only buildings left will be the Reactor buildings, ILW store and the Ponds and Vaults complex weather envelope. Intermediate level radioactive waste (ILW) is retrieved from current storage locations, processed and then placed into a new purpose-built store until a suitable geological disposal facility becomes available. As a result of proposed changes to the decommissioning scope, it is likely that the site’s substation will be left. In addition, foundations and bases of structures are likely to remain, against the consented plan to remove. Upon completion of C&MP, the site will then have been put into a passively safe state where the need for human intervention to maintain acceptable conditions is minimised, i.e. during the Care and Maintenance period. The site aims to be substantially completed for Care and Maintenance (C&M) by the end of 2018. The mitigation measures detailed within this plan will continue to be adhered to, and in addition to full consultation with the Regulators, any changes will be managed in accordance with the site’s management control process that ensures the provisions of Regulation 13 of the EIA DR99 (as amended) are met. This EMP will be updated and re-issued to incorporate any major changes, as required.

Care and Maintenance (C&M)

This is a mainly quiescent phase, lasting until approximately 85-105 years after cessation of generation, during which no dismantling is carried out but the site continues to be managed, monitored and maintained to ensure that it is kept in a passively safe and secure state. The site continues to be the subject of a Nuclear Site Licence during this period. Packaged radioactive ILW waste will be removed as and when a disposal route becomes available to receive the waste from this site.

Final Site Clearance (FSC)

The final phase of decommissioning, which is expected to last about 10 years, involves the dismantling of the remaining structures on the site, including the reactors, the clearance of any residual radioactivity to the applicable standards and the de-licensing of the site so that it can be made available for alternative use, as appropriate.

The mitigation measures listed in section 3.1 of this EMP are similarly divided into these three phases.

Mitigation measures may change in the future in light of experience and developing technologies. The impacts of the later phases of work have been documented in the original Environmental Statement, but due to the difficulty in predicting the nature of environmental and regulatory regimes over long periods, more confidence should be attached to the assessment related to the earlier phases. Consequently, mitigation measures for activities during FSC will be refined, based on technologies available at that time.
Topics

Beneficial or adverse environmental impacts were divided into 9 topic areas within the original application to decommission Bradwell in April 2002. These topic areas are continued within the EMP and are:

- Air Quality and Climatic Factors
- Archaeology and Cultural Heritage
- Ecology
- Geology, Hydrology and Soils
- Landscape and Visual
- Noise and Vibration
- Socio-Economic
- Surface Water Quality and Drainage
- Traffic and Transport
3. The Site and Surrounding Area

Site Description

Bradwell site is a Magnox nuclear reactor site and is one of twelve currently operated by Magnox Ltd. The Nuclear Decommissioning Authority (NDA) gained ownership of the Bradwell site on 1st April 2005.

The site in its current state comprises a mixture of building types that range from large permanent brick or concrete built structures to corrugated metal structures and portable cabins, as well as a road network within a high metal fence.

A huge void exists in the north western part of the site created by the demolition of the turbine hall. This void is currently used as a laydown area for ongoing decommissioning activities. The remaining areas consist of hardstandings from foundations or bases of structures removed and well-tended, mown amenity grassland, which is generally of low floristic diversity, with beds of ornamental, non-native shrubs.

Surrounding Landscape

Habitats present outside the site include shrub, unmanaged grassland, ditches, plantation woodland and amenity grassland. To the east of the site is an area of amenity grassland that is managed as a hay meadow. The section of the Borrow Dyke (see Figure 2) to the west of the site is characterised by having open water within its central area that is fringed by common reed. In contrast, the section of the dyke that lies immediately to the north of the site supports dense common reed with little surface water at all. The section to the east of the site also holds little or no water and supports a mosaic of dense reed habitat and grassland dominated by sea couch.

Transport Infrastructure

The main vehicular access to the Bradwell site is from the A414 at Maldon, then via the B1018 to Latchingdon, followed by the unclassified road C111 through the settlements of Mayland and Steeple, and then the B1021 to the Bradwell site. An alternative but less direct route using B class roads is available by continuing on the B1018 to Southminster and then travelling north on the B1021, passing through Asheldham and Tillingham.

Sensitivity of the Receiving Environment

The Blackwater Estuary, the Dengie Flats and the Colne Estuary are all Sites of Special Scientific Interest (SSSI) and National Nature Reserves (NNRs). The boundaries of the Blackwater Estuary and Dengie Flats SSSIs meet on the shore adjacent to the reactor site, and the Colne Estuary designation lies off the north shore of the channel opposite the site. All three form the majority of the Mid Essex Ramsar site complex and lie within the Mid Essex Coast Special Protection Area (SPA) and the Essex Estuaries candidate marine Special Area of Conservation (cSAC). The Blackwater also forms part of the Blackwater, Crouch, Roach and Colne Marine Conservation Zone which was designated in December 2013. These designations recognise the importance of the area for its estuarine habitats in general, for certain specified plant communities and habitat features, and for a wide range of species dependent upon these. The SPA and Ramsar designations relate especially to various wintering and breeding birds.

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1 Where a SPA or SAC is continuously or intermittently covered by tidal waters or includes any part of the sea adjacent to the UK, the site is referred to as a European Marine Site. The marine components of the Essex SPAs and SACs are treated as a single European marine site called the Essex Estuaries European Marine Site (EEEMS).
3.1 Identified Impacts and Mitigation Measures

In support of the application to decommission under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (EIADR99) and the Town and Country Planning (Environmental Impact Assessment) 1999 Regulations (TCP(EIA) 99), Environmental Statements were compiled in which potential impacts and key mitigation measures were identified for the three stages of decommissioning.

There were two significant changes to the mitigation measures that were submitted in the Environmental Statement submitted in 2002. The two changes were:

- Treatment of aqueous effluent from the dissolution of Fuel Element Debris (FED) in dilute nitric acid to reduce radioactivity and pollutants before discharging into the Blackwater Estuary; and
- Treatment of Oxides of Nitrogen (NOx) from the FED treatment process in scrubber columns to reduce NOx emission levels.

The dissolution of FED was completed in June 2017, no further FED effluent will be created or discharged and NOx emissions have also ceased. The FED dissolution plant has now been through post-operational clean out (POCO) and the plant, along with the NOx scrubber columns, is currently in the process of being deplanted.

The mitigation measures identified in both Environmental Statements are presented in the tables in normal script, the mitigation measures identified in the ES under EIADR99 only are in *italics* and those mitigation measures identified in the ES under TCP (EIA) 99 only are *underlined*.

The following tables list the mitigation measures identified for each phase of the decommissioning project separately (Tables 1 – 3).

**Table 1: Care & Maintenance Preparations Phase**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Nature of Impact</th>
<th>Mitigation Measures Proposed</th>
</tr>
</thead>
</table>
| Air Quality and Dust            | Dust emissions during excavation, demolition and construction activities, including storage and handling of soil and material. | - Minimising unnecessary handling of materials;  
- Carrying out activities during a period of poor dispersion conditions (i.e. very low wind speeds) and minimising activities in dry / windy weather conditions;  
- Enclosing or covering containers of dusty materials during loading and transport;  
- Using water sprays to maintain damp surfaces during dry weather;  
- Seeding surfaces of completed mounds; and  
- Construction of wind fences at the site perimeter or around dust sources as appropriate. |
| Archaeology and Cultural Heritage | Impact on cultural heritage (decommissioning of buildings, structures and the technology housed therein). | - Royal Commission on the Historic Monuments of England (RCHME) level 1 survey of the affected power station buildings to be undertaken prior to decommissioning. |
| Ecology¹                        | Loss of habitat of great crested newt.                                           | - Additional tree and shrub landscape planting will have the effect of providing additional or enhanced foraging habitat which will be greater in extent and better in quality than the habitat lost. |

¹ Mitigation measures to be implemented only during FSC and/or ILW removal to repository are not included in this list.
<table>
<thead>
<tr>
<th>Topic</th>
<th>Nature of Impact</th>
<th>Mitigation Measures Proposed</th>
</tr>
</thead>
</table>
| Incidental mortality of newts and reptiles. | • The provision of great crested newt and reptile exclusion fencing to prevent them from entering areas where they could be at risk of mortality.  
• Provision of watching briefs as required when work involving excavation is taking place. | |
| Noise and vibration disturbance of protected species including birds. Visual disturbance of birds. | • See noise and vibration mitigation measures;  
• Avoid the most visually intrusive and noisy work during the bird over-wintering period (October to March). | |
| Disturbance of Flora and Fauna. | • An ecology survey will be undertaken within 500m of the site fence prior to the start of works outside the site fence, and appropriate measures taken. | |
| Dust deposition on protected sites. | See dust control measures. | |
| Pollution of the borrow dyke and drainage ditches etc. (water vole habitat). | • See surface water mitigation measures regarding pollution prevention and control measures. | |
| Loss of and disturbance to marine species. | • An environmental risk assessment for FED discharge and impact on water quality and ecology in the Blackwater Estuary was undertaken to support the application for an Environmental Permit. This study demonstrated that the metals and nitrates discharged were below the required “no detriment” threshold set by the Environment Agency (EA), and as such the discharge had no significant effect on the status of the estuary. | |
| Disturbance/mortality of bats. | • Buildings would be checked for the presence of bats by an appropriately qualified expert before demolition or removal. Should any be found, consultations with Natural England would be undertaken to agree appropriate mitigation. | |
| Geology, Hydrogeology and Soils | Spread of contamination from any excavations that may encounter contaminated soils, including potential inappropriate use of contaminated soils as infill material. | • Sampling, testing and appropriate management of soils during excavation; containment and off-site disposal of contaminated soils. Any excavated soils identified as contaminated will be segregated from non-contaminated soils and carefully managed to prevent the spread of contamination, then disposed of off-site at appropriate disposal facilities, subject to the necessary regulatory permissions;  
• Imported fill material will be inspected to ensure it is not contaminated and that it meets, at least, the Waste Resources Action Programme (WRAP) aggregate specification. |
| | Spread of contamination from any demolition waste, including potential inappropriate use of contaminated demolition waste as infill material. | • Sampling, testing and appropriate management of demolition waste; containment and off-site disposal of contaminated demolition waste;  
• Excavations will be covered, where possible, to avoid water accumulation. |
| | Spread of contamination from any excavations that may encounter or accumulate contaminated waters. | • Control of water ingress; testing and appropriate management of water entering excavations with contaminated soils. |
| | Risks of spills to ground of fuel or chemicals. | • Bunding of chemical and fuel storage according to regulations; appropriate protocols for chemicals and fuel handling in line with regulations and industry best practice;  
• Emergency spill response planning according to |
<table>
<thead>
<tr>
<th>Topic</th>
<th>Nature of Impact</th>
<th>Mitigation Measures Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Changes to groundwater</td>
<td>regulation and industry best practice, including spill kits kept on site.</td>
<td><strong>Inert backfill (e.g. uncontaminated demolition rubble from the site)</strong> would be placed and compacted within underground structures and artificial drainage points created to prevent build up of groundwater levels.</td>
</tr>
<tr>
<td>level.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Landscape and Visual      | Visual impact from site wide demolition activities and LLW facility, ILW store.  | • A planting scheme will be implemented.  
• Design and choice of the colour of cladding materials have been developed with the aim of reducing the visual impact.                                                                                                                                                       |
| Noise and Vibration       | Noise from site activities.                                                      | • All construction activities to be undertaken in accordance with good practice as described by British Standard 5228:2009 Noise and Vibration Control on Construction and Open Sites – this includes minimising unnecessary revving of engines, turning off machines when not required and routine maintenance of equipment;  
• The site can be contacted to make complaints and queries. Complaints to be investigated and action taken where appropriate;  
• Use of equipment fitted with effective silencers/insulation;  
• Main noise generating activities restricted to daytime hours, work outside these hours will be agreed with local authority;  
• Mitigation by distance and screening will be maximised where possible;  
• Use of concrete crushers rather than pneumatic hammers;  
• If piling is considered to be necessary, jacked or bored piling techniques to be used in preference to driven piling; and  
• Concrete batching and crushing plant will be located away from the closest properties at Downhall Beach Estate.                                                            |
| Socio-Economic            | Change in site employment level in the local economy.                            | • Magnox Ltd will attempt to re-deploy affected staff, phased employment reductions provide opportunities for early retirement/severance & support staff re-training/ re-skilling; and  
• Magnox Ltd will encourage its contractors to make use of local labour, equipment and services as far as practicable.                                                                                                             |
|                           | Change in level of demand for temporary accommodation.                           | • Ensure that measures are taken to prevent the use of unlicensed sites for caravan accommodation. Measures to maximise the use of locally sourced contract labour will also help to minimise the demand for temporary accommodation in the area.          |
| Surface Water Quality     | Minimisation of turbid water or contaminants entering surface water drains on site.| • Minimising the stockpiling of loose materials and the area of bare ground;  
• Minimising the movements of soil during wet weather;  
• Wetting down (e.g. excavation or construction/ demolition areas) to prevent windblown spread of dust into locations where subsequent washing into surface water drains would be likely;  
• On-site roads to be regularly kept free from mud/ dust deposits, including the use of re-circulating water wheel washers and road cleaners as appropriate;                                                                 |
<p>| and Drainage              |                                                                                  |                                                                                                                                                                                                                           |</p>
<table>
<thead>
<tr>
<th>Topic</th>
<th>Nature of Impact</th>
<th>Mitigation Measures Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimisation of turbid water entering surface water drains etc. off site.</td>
<td>Cleaning of on-site roadways (see above) and cleaning of all soiled vehicles before leaving site (recirculating wheel washers).</td>
<td></td>
</tr>
<tr>
<td>Maintaining effluent quality released to the estuary.</td>
<td>The sewage treatment works will be managed to ensure that full treatment is maintained with declining loads, by modifying the operating regime as appropriate to ensure that the biological treatment process is maintained at optimum performance, thus avoiding deterioration in effluent quality. Effluent from the sewage treatment plant is periodically monitored and all other effluent will be appropriately characterised and monitored to ensure agreed environmental limits are met before discharge.</td>
<td></td>
</tr>
<tr>
<td>Minimisation of risk of spills of concrete, cement, fuels, oils or other chemicals.</td>
<td>Appropriate protocols for handling of concrete, cement, fuel and any other chemicals, in line with regulations and industry best practices.</td>
<td></td>
</tr>
<tr>
<td>Minimisation of impact upon surface waters of any spills of concrete, cement, fuels, oils or other chemicals.</td>
<td>Careful siting of concrete batching plant (if used) and fuel/chemical handling facilities according to regulation and industry best practice (i.e as far as possible from watercourses and surface water drains and on impermeable base for refuelling). Oil separation facilities will be installed on the surface water drainage system at appropriate locations and a maintenance programme undertaken; Bunding of fuel storage according to Oil Storage Regulations; and industry best practice. Emergency/spill response planning according to regulation and industry best practice; e.g. provision of spill kits kept on site and a site spill response plan.</td>
<td></td>
</tr>
<tr>
<td>Flooding or Bank Erosion.</td>
<td>Control of rate of discharge to surface water drains (if discharge is necessary).</td>
<td></td>
</tr>
<tr>
<td>Traffic and Transport</td>
<td>Impacts on safety etc. due to decommissioning traffic.</td>
<td>A Transport Plan will be implemented with the objective of reducing the number of trips generated by the site throughout the entire decommissioning process.</td>
</tr>
<tr>
<td></td>
<td>Impacts on safety etc. due to mud on roads.</td>
<td>Wheel washing of HGVs as necessary.</td>
</tr>
</tbody>
</table>
### Table 2: Care & Maintenance Phase

Mitigation measures already identified (Condition 3a)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Nature of impact</th>
<th>Mitigation Measures Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality and Dust</strong></td>
<td>Dust emissions during excavation, demolition and construction activities, including storage and handling of soil and material.</td>
<td>• Dust generation from demolition and construction activities would have been completed.</td>
</tr>
<tr>
<td></td>
<td>Dust emissions during movement of vehicles.</td>
<td>• Few vehicles would be operating in and around site; a few vehicles may be involved in ILW removal from site however the contribution to air quality would be negligible.</td>
</tr>
<tr>
<td><strong>Ecology</strong></td>
<td>Disturbance to birds from traffic noise during removal of ILW.</td>
<td>• Removal operations will be programmed sensitively.</td>
</tr>
<tr>
<td></td>
<td>Increased road mortality for great crested newts during removal of ILW.</td>
<td>• The presence or otherwise of great crested newts could be monitored as part of site management during C&amp;M phase.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• A detailed mitigation plan will be developed.</td>
</tr>
<tr>
<td><strong>Geology, Hydrogeology and Soils</strong></td>
<td>Changes to groundwater quality through disturbance of contaminated soils from excavation of subsurface structures and/or services.</td>
<td>• Management of contaminated soils to avoid leaching into previously clean soils and groundwater.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Groundwater monitoring to provide assurance for water quality during C&amp;M phase.</td>
</tr>
<tr>
<td><strong>Landscape and Visual</strong></td>
<td>Visual impact from the constructed ISF.</td>
<td>• The planting management regime (e.g. replacing of trees and scrubs, thinning) would be agreed with the local planning authority, as relevant and appropriate.</td>
</tr>
<tr>
<td><strong>Surface Water</strong></td>
<td>Avoidance of localised flooding.</td>
<td>• Drainage facilities in place during and after C&amp;M period to avoid localised flooding.</td>
</tr>
</tbody>
</table>

### Table 3: Final Site Clearance Phase

Mitigation measures already identified (Condition 3a)

<table>
<thead>
<tr>
<th>Topic</th>
<th>Nature of impact</th>
<th>Mitigation Measures Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>All topic areas</td>
<td>It is predicted that the impact may be as those identified in Table 1.</td>
<td>• Mitigation measures proposed for this section are identical to those specified in Table 1.</td>
</tr>
</tbody>
</table>
3.2: Future mitigation measures (Condition 3b and 3c)

Work activities beyond final site clearance phase have not yet been identified. As a result a list of mitigation measures required during any future phases cannot yet be identified.

3.3: Activities where mitigation measures may be required but cannot yet be identified and assessed (Condition 3c).

Currently no such work activities have been identified.
4. Implementation of the Environmental Management Plan

It is a requirement of the conditions attached to the consent (Appendix A), to implement the mitigation measures and describe their effectiveness. This chapter lists the mitigation measures (identified in Table 1) which have been implemented, explains how the site evaluates their effectiveness in reducing environmental impacts and describes their use in some relevant projects on site.

Process for Implementation of Mitigation Measures

Bradwell site procedures ensure that decommissioning activities are carried out in accordance with the mitigation measures set out in this EMP. All decommissioning projects and modifications to plant are assessed during the proposal stage (see Appendix B) in accordance with robust company management control procedures.

There are a number of tools used on site to ensure that all environmental impacts are minimised. The site has an Integrated Management System, which covers the requirements of ISO9001 (Quality Assurance), ISO14001 (Environmental Management System) and OHSAS18001 (Occupational Health and Safety Management System).

Bradwell also undertakes Best Available Techniques (BAT) studies for those projects where it is deemed that there is a potential for significant radioactive and non-radioactive discharges and disposals from the site, e.g. site waste management, decommissioning or restoration projects and where it is required to demonstrate that these impacts are minimised through evaluation by a clear, systematic process.

Processes for Determining Effectiveness of Mitigation Measures

The site aims to continually monitor the effectiveness of the specified mitigation measures over time and, where necessary, review these in order to ensure the success of reducing significant environmental impacts. Critical to environmental protection is the close interaction between projects and the environment team, ensuring mitigation measures are considered, applied and reviewed, where relevant, throughout the lifecycle of the project from conception to completion. It also allows enabling supervision and practical evaluation of the effectiveness of the mitigation measure. Evaluations can provide valuable feedback on any difficulties encountered, changes required or highlight further mitigation requirements.

The site measures the effectiveness of mitigations in a variety of ways, these are outlined below.

i) Environmental Performance Monitoring

Environmental performance monitoring (e.g. dust, noise, groundwater monitoring), using specialist equipment, allows us to assess environmental impacts post-mitigation (as well as baseline). Post-mitigation environmental monitoring will be used mostly to measure effectiveness of mitigation measures for larger projects on site, e.g. movement of large quantities of spoil or demolition of buildings. The requirement of this method of measuring effectiveness is determined on an individual project basis as appropriate. Effectiveness of radiological mitigations is monitored via the site's Environmental Monitoring Programme.

ii) Visual evidence

Site photographs taken before the start of a project provide a good visual indication of the surrounding area and help to identify potential environmental receptors in the vicinity (e.g. surface drains) and hence highlight mitigation measures that need to be implemented. Visual inspections and photographs can also provide an indication on effectiveness of mitigation measures. For example, presence of mud on roads can be an indication of insufficient wheel washing of heavy goods vehicles.

iii) Review of Regulatory Action, Complaints and Internal Event Reporting

Review of regulatory actions, complaints and internal event reporting is a form of reactive monitoring which can provide valuable information about where mitigations may not be effective or where further mitigations are required. The site operates a robust system of internal event reporting called Operations Experience Feedback (OEF). With OEF, staff and contractors are encouraged to report conditions which are unsafe or pose a threat to the environment.

These are then rectified and investigated where necessary. For example, complaints from members of the public on noise related activities on site can be an indication that silencers on equipment may be required.

Some examples of mitigation measures for current and ongoing project activities are outlined below:
Air Quality and Climatic Factors

Electronic dust and particulate monitors were used when major demolition works were ongoing. However, the large-scale decommissioning projects which have the potential to produce dust and therefore reduce air quality have now been completed. As a result, dust monitoring on site has ceased and the dust monitors removed.

Dust suppression has been employed on all demolishing works on site. Figure 3 shows the demolishing of the central change buildings where dust suppression was employed to minimise dust emission.

Figure 3: Dust suppression on projects on Site

Fuel Element Debris (FED) Treatment

A review of waste treatment options identified an opportunity to significantly reduce the volume of FED and consequently allow for a considerably smaller ILW store. This strategy involved dissolving FED in dilute nitric acid rather than the originally proposed encapsulation in cementitious grout. This treatment of FED produced a gaseous discharge of Oxides of Nitrogen (NOx). Therefore a ‘scrubbing’ process was put in place to reduce gaseous emissions to meet Environmental Quality Standards. Following optioneering workshops, three NOx scrubbers (see Figure 4) were installed to reduce the NOx emission levels in agreement with the EA. Dedicated monitoring equipment was installed to ensure the NOx levels remained within the agreed EA limits.

As mentioned earlier, the dissolution of FED was completed in June 2017, no further FED effluent will be created or discharged and NOx emissions have also ceased. The Fuel Element Debris Dissolution (FEDD) plant has now been through post-operational clean out (POCO) and the plant, along with the scrubber columns, are currently in the process of being deplanted.

Figure 4: NOx Scrubber Towers

Ecology

All ecology surveys on site are undertaken by a specialist ecology contractor or the Company’s ecologist. Various bat and bird surveys have been commissioned prior to the start of demolition projects on site. To demonstrate this, an independent ecologist was contracted to carry out an initial bat survey of the site’s Ponds Building Complex before commencing with demolition. The survey concluded that there wasn’t any evidence of bats in any of the buildings and neither were bats access points identified to any of the buildings.

In addition, the north end of site had an Extended Phase 1 Habitat Survey undertaken to determine any potential ecological constraints to the land remediation works. Additional bat, badger and reptile surveys were carried out immediately before the project commenced. Furthermore, an ecologist was on site to provide a “watching brief” during the start of excavation activities on the project.

During the C&M preparations phase, the reptile fence is continuing to be maintained to prevent reptile ingress and any injury or death to protected species.

To further maintain and increase biodiversity onsite, two peregrine falcon nesting boxes have been mounted, one on each of the newly clad reactor buildings. This is to provide a safe place for the falcons to nest and prevent potential destruction of eggs and injury to young falcons when they fledge. During the summer months, a pair of peregrine falcons successfully fledged one chick from their new home in the nesting box on Reactor 1. The site is hopeful that this indicates that they are likely to return this year.
Geology, Hydrology and Soils

A continuing soil sampling regime is undertaken across the site to provide a more detailed description of land quality. This information is used to advise projects in the area of any known or potential contamination. Concrete is subject to testing to determine whether it meets the inert criteria under the waste acceptance criteria, and this material is re-used on site wherever possible.

The CL:AIRE code of practice (Contaminated Land: Applications in Real Environments) has also been implemented on site to manage excavated and demolition materials. A materials management plan has been written under the protocol which allows source segregated aggregate arising from demolition activities, such as crushed brick and concrete, to be reused on site as fill material for onsite voids.

Material generated from excavation works such as the new site drainage system and the new site perimeter fence installation has also been used for infilling of voids on site (see Figures 6 and 7) under the CL:AIRE protocol. The re-use of excavated material has and will continue to reduce the quantity of resources required as it reduces the requirement for imported fill material. So far, approximately 12000m³ of material has been re-used on site. This reduces the cost of waste disposal and the importation costs associated with new in-fill material. Re-using site material also significantly reduces the CO₂ emissions associated with the handling and disposal of excavated material as well as the transport of new in-fill material to site.

The use of the CL:AIRE protocol helps to ensure that the site uses spoil and concrete in a sustainable manner, and adheres to environmental best practice.

Land Remediation at the North End of the Site

The land remediation project is now complete. The higher radiologically contaminated soil has been excavated and sent offsite for disposal. A capping and containment system has been installed to minimise the migration of contaminants offsite during C & M.

Landscape and Visual

Cladding of the reactor weather envelope is almost complete. The reactor weather envelope will become one of the most visually dominant structures on the Bradwell site as well as from the surrounding fields. The potential visual impact was taken into consideration at the design stage and as a result the cladding material was chosen to be sympathetic to the surrounding environment. The cladding is designed to safely encompass the reactors throughout the C&M phase.

Following the demolition of some of the redundant buildings within the Ponds Complex (Figures 8 and 9), optioneering and design of a low profile weather envelope over the ponds and vaults complex (Figure 10) was carried out. The design has now been granted planning permission and enabling, and construction work is ongoing.
The weather envelope over the ponds and vaults will be sympathetic to the other remaining structures, i.e. the reactor weather envelope buildings (Figure 11) and the ILW store (Figure 12). All plant/buildings will be finished in a colour that allows them to blend with the reactor buildings (light grey).

A revised landscaping programme of tree planting has been developed to minimise the visual impact of the site and will be maintained during the C & M Phase. The plan was submitted to the local planning authorities and has received approval to implement.

Currently work is ongoing (Figure 13) on an area outside of the perimeter fence which had been utilised as a car parking area. Following the reduction in numbers of personnel on site, the car park is no longer required. The area is now being returned to its original state as required by the planning consent.
Noise and vibration

Intrinsically noisy work activities are limited to standard working hours and winter months are avoided, where practicable, to minimise the impact on wintering birds.

During the recent piling works associated with the Ponds Building Complex weather envelope, the site undertook a noise assessment and a noise barrier was put in place to prevent disturbance to over-wintering birds on the Blackwater Estuary.

In addition, the site also undertakes noise monitoring when carrying out noisy work activities.

Socio-Economic

The Bradwell Power Station Legacy Partnership was set up in July 2014 under the umbrella of Maldon District Council. The partnership brings together representatives from local businesses, the voluntary sector, tourism, various agencies as well as local and county councils to look at a way forward for the district as Bradwell site moves closer to C&M. The partnership is now gathering momentum and developing proposals for the district in line with the socio-economic report and Maldon Economic Prosperity Strategy which has identified thematic areas of focus namely; tourism, skills, business premises, business and community support.

The group meets every three months and is already making good progress. The £150,000 enabling fund from Magnox has helped support the development of socio-economic projects and is being put to good use with free ‘Business Support Workshops’ being offered in the district through Dengie Enterprise Support. The workshops offer help and support to start a new or grow an established business. Further information is available on www.dengieenterprisesupport.co.uk or call 01621 834 525. Another area being looked at is the brand for the district to give it a clear identity with several designs being considered that take on board the diversity of what the area has to offer in terms of the wildlife, natural environment, industrial and historical heritage.

The Magnox Socio Economic Fund has supported the Bradwell-on-Sea Community Shop Project with £25,000 to help mitigate the socio economic impact of the Bradwell site closing. There are several other applications in the pipeline as well as large transformational projects being developed. For further information or to apply go to: www.magnoxsocioeconomic.com

Surface Water Quality and Drainage

A programme of drainage inspections and repairs has been completed. Smaller diameter drains were replaced with larger ones to manage drainage during heavy rainfall events.

The site has completed the installation of four new pipelines within the existing east outlet culvert (Figure 14). The pipelines will be for all onsite aqueous arisings such as surface water run-off in C&M. This discharge route has been granted an environmental permit subject to notification to the EA. The pipelines are not yet connected to the current discharge system and work to connect them will commence soon.

Traffic and Transport

Transport Plans are produced for individual projects where significant traffic movements are expected. The plans detail the preferred road routes and transport options. When projects are expected to produce large volumes of waste, disposal sites within close proximity are favoured, and skips are double loaded to reduce the number of journeys needed.

Movements of HGVs are planned, where possible, to minimise the impact to the local communities and to avoid local peak traffic times, i.e. 06:30 – 07:30 and 17:00 - 18:00.

Contractors are encouraged to utilise shared transport for their staff. In addition, the site has introduced a car sharing scheme through liftshare.com to further reduce the site’s carbon footprint.
5. Changes to the Environmental Management Plan

Since the start of decommissioning works on site, a number of changes have been made to the consented Environmental Statement. The Environmental Statement provides the description of works proposed for the decommissioning activities. Below are some of the key changes to the consented activities proposed in the Environmental Statement.

FED Dissolution and Treatment of Resulting Effluent

FED dissolution in dilute nitric acid was fully commissioned in 2015 instead of the encapsulation in cementitious grout proposed in the original Environmental Statement issued in 2002. As previously described, the process generated radioactive aqueous and gaseous discharges. The resulting aqueous effluent was treated in an aqueous discharge abatement plant where most of the radioactivity was removed from the liquid. Heavy metals were also significantly reduced during the treatment process. Treated effluent from this highly efficient and innovative process was carefully analysed and monitored in our laboratory. This ensured it met all the EA’s permitted criteria before discharge.

As mentioned earlier, the dissolution of FED was completed in June 2017, no further FED effluent will be created or discharged and NOx emissions have also ceased. The FEDD plant has now been through POCO and the plant, along with the scrubber columns, are currently in the process of being deplanted.

Importation of ILW from Sizewell and Dungeness to Bradwell

The waste strategy for the company has been reviewed and endorsed by the Nuclear Decommissioning Authority (NDA). The new strategy includes importing packaged ILW from Sizewell A and Dungeness A to Bradwell for storage in the Interim Storage Facility (ISF) until a geological disposal facility becomes available.

The spare storage capacity is as a result of contingency space built into the Bradwell ISF that has not been used and successes in minimising the volume of ILW through waste processing. Storage of imported ILW packages in the Bradwell ISF will avoid the construction of two ILW stores in the south east, delivering significant safety, environmental and cost benefits and reducing costs to the UK taxpayer by approximately £30 million.

The transfer is likely to occur between 2018 and 2020. The proposed work period may change depending on the NDA funding availability.

Leaving Foundation and Slabs of Buildings onsite During C&M

Foundations and slabs of buildings/structures demolished/removed as part of the decommissioning activities will be left on site during C&M. This is part of a revised Licence Condition (LC)35 Assessment for proposed changes to Bradwell Site Decommissioning Strategy. The previous strategy stated that redundant facilities (primary non-contaminated structures) would be deplanted and demolished to below ground level. Slabs/foundations were to be removed or made safe.

It is now proposed to leave materials that do not present an immediate hazard to the environment and people on site until FSC. The slabs and foundations are deemed not to pose any immediate hazard therefore removing them would not provide any environmental or cost benefits. This revision of the decommissioning strategy will not result in the change in duration of the decommissioning works.

Leaving the Turbine Hall Void Unfilled Going into C&M

As part of a revised strategy for C&M, the turbine hall void will be partially unfilled by C&M entry. This contradicts the original Environmental Statement which states that all voids on site are to be filled at C&M entry. The ES states that voids will be back filled with inert material once structures have been demolished.

The turbine hall void is approximately ~ 40,958m$^3$ and at this point in time there is not enough demolition material on site to fill it by C&M entry ~2018 to fulfil the commitment. The deferral of infilling activities has presented two different scenarios which require environmental impact assessment to be carried out;

1) fill the void throughout C&M as and when material in the local area becomes available or

2) fill the void at FSC.

C&M

Throughout C&M there is the potential that materials will become available from local earthworks which could provide a source of aggregate to fill the turbine hall void. For example a significant volume of material could be generated through the excavation earthworks from EDF’s proposed civil nuclear new build which may be located adjacent to the current Bradwell site. The impact of importing materials from the proposed works has not been assessed in the current ES and it is likely that a new transport plan would have to be implemented.
FSC

At FSC it is anticipated that enough inert material will be generated through the demolition of Reactor 1 and 2 buildings which has the potential to fill the turbine hall void.

Change of scope environmental impact assessments of all the above changes have been carried out and the effects were found not to be significant. This has been recorded as a ‘Finding of No Significant Effect’ as prescribed in the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations, 1999, as amended (EIADR).

Some changes to mitigation measures may be required as a result of changes to decommissioning and waste management strategies (e.g. acceleration of decommissioning, changes to ILW processing and storage arrangements).

Those changes to site strategy will be assessed following appropriate requirements and company procedures. If that assessment indicates a need for mitigation measures in the EMP to be significantly changed, then Bradwell Site will notify the ONR of such change no less than 30 days before the change is made, or within such shorter time as the ONR may agree. The EMP will also be updated appropriately and re-issued.
6. Distribution of the Environmental Management Plan

In addition to the submission of this EMP to the ONR, Magnox Ltd. will provide copies of the EMP to the:

- Environment Agency
- Nuclear Decommissioning Authority
- Local Community Liaison Committee
- Bradwell Site Internal Website
- Essex County Council
- Maldon District Council
- Bradwell Parish Council

Copies of this EMP can be viewed at the following locations:

**Burnham On Crouch Library**
103 Station Road
Burnham-On-Crouch
CM0 8HQ
Tel: 01621 782006

**Maldon Library**
Carmelite House
White Horse Lane
Maldon
CM9 5FW
Tel: 01621 853556

**Chelmsford Library**
Market Road
Chelmsford
Essex
CM1 1LH
Tel: 0845 603 7628

Or via internet from:
http://www.magnoxsites.co.uk/publications/

Any queries relating to the decommissioning activities at Bradwell site or requests for copies of this EMP should be addressed to:

The Closure Director
Bradwell Site
Bradwell-on-Sea
Southminster Essex
CM0 7HP
Appendix A: Decommissioning Consent

Decommissioning Project Consent No.1

December 2003

NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR DECOMMISSIONING) REGULATIONS 1999

CONSENT

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

BRADWELL POWER STATION

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

Dated: 5th December 2003

For and on behalf of the
Health and Safety Executive

Signed

M W Weightman
A person authorised to act in that behalf

¹Project 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)

BRADWELL POWER STATION

Condition 1
The project² shall commence before the expiration of 5 years from the date of this Consent.

Condition 2
(1) The licensee is required to prepare and implement an environmental management plan to cover mitigation measures to prevent, reduce and where possible offset any significant adverse effects on the environment.

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

Condition 3
Within 90 days of the date of this Consent, with reference to the environmental statement provided under regulation 5(1) and further information provided under regulation 10(1), the environmental management plan shall:

a. list the mitigation measures that are already identified;

b. list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future;

c. list the work activities were mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future;

Condition 4
Subsequent to condition 3, the environmental management plan shall:

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

²Project as defined in regulation 2
b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;

c. describe the effectiveness of the mitigation measures over time;

d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5

The licensee is required to:

a. provide the environmental management plan to the Health and Safety Executive within 90 days of the date of this consent and every year thereafter, or within such longer time as the Executive may agree;

b. make the environmental management plan available to the public within 30 days of the plan being sent to the Health and Safety Executive, or within such longer time as the Executive may agree; the plan may replace earlier versions.

Condition 6

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

Dated: 5th December 2003

For and on behalf of the
Health and Safety Executive

Signed

M W Weightman
A person authorised to act in that behalf
# Appendix B: Site Procedures for Reducing Impact

## Minimising Environmental Impacts — Decommissioning Proposal Approval Form

### PART 5 – ENVIRONMENTAL SAFETY ASSESSMENT

Subsections 5.1 and 5.2 to be categorised individually before overall environmental category assigned in subsection 5.3.

### 5.2 EIA DR 99 ENVIRONMENTAL IMPACT AND REGULATORY COMPLIANCE

The following checklist must be completed by an Environmental SQEP(s)*. The assessment is for compliance with the decommissioning consent and other relevant aspects of compliance with the EIA DR 99 Regulations, non-radiological permits/consents, other relevant legislation and environmental issues.

*Generally Environmental SQEP(s) on site have competency to assess all aspects of 5.2, where this is not the case, the site must ensure that appropriate assessment is made.

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONSIDER POTENTIAL FOR:</th>
<th>NO</th>
<th>YES</th>
</tr>
</thead>
</table>
| 5.2.1 Decommissioning Baseline | Does this proposed modification represent a change from the Decommissioning Project baseline as described in the Environmental Impact Assessment Baseline document (in particular, is it sufficient to trigger Regulation 13 determination)?
If ‘YES’, it is considered to be a change - complete the relevant Assessment Forms in accordance with S-159. |    |     |
| 5.2.2 Management              | Does the proposal challenge compliance with the EIA DR Regulations                                                                                                                                                     |    |     |
| 5.2.3 Discharges & Waste      | Could the proposal, if inadequately conceived or executed, lead to a breach of an existing Environmental Permit, or other environmental license/regulatory requirement (e.g., wildlife management license, PCB registration, greenhouse gas trading permit, marine consent, waste management exemption)?
(For Scottish sites, a breach of a Controlled Activities Regulations Discharge Consent, Pollution Prevention Control Permit, Waste Management / Exemption?) |    |     |
| 5.2.4 Discharges & Waste      | Is a change to an existing Environmental Permit or new Environmental Permit required for this proposal?
(For Scottish sites, a change to existing / or a new Controlled Activities Regulations Discharge Consent, IPC authorisation, PPC Permit, Waste Management / Exemption?) |    |     |
| 5.2.5 Environmental Impacts   | Could the proposal, if inadequately conceived or executed, lead to an unacceptable environmental impact (e.g., inadequate storage of oils and chemicals leading to on or off-site spill, disturbing known or Suspect contaminated ground)?
If so, appropriate controls / mitigation must be specified |    |     |
| 5.2.6                         | If any of the questions above have been answered ‘YES’ then Environmental Justification / Mitigation Statement must be completed in box 5.3 as part of the overall environmental justification. If all the answers are ‘NO’ then the proposal is Category E3 with |    |     |
| 5.2.7 CONTROL MEASURES AND COMMENTS |                                                                                                                                                                                                                     |    |     |
| 5.2.8 Potential Environmental Category with respect to EIA DR 99 Compliance. |
E1 □  E2 □  E3 □ |

Name:  
Signature:  
Date:  

---

*Environment SQEP*
### Appendix B – Continued

Minimising Environmental Impacts — Decommissioning Proposal Approval Form

<table>
<thead>
<tr>
<th>PART 5 – ENVIRONMENTAL SAFETY ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subsections 5.1 and 5.2 to be categorised individually before overall environmental category assigned in subsection 5.3.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5.3</th>
<th>OVERALL ENVIRONMENTAL ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>To be completed by the NRE, with signatures from Environmental SQEP and EHSS&amp;Q Manager as</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>5.3.1</th>
<th>ENVIRONMENTAL JUSTIFICATION / MITIGATION</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>5.3.2</th>
<th>OVERALL ENVIRONMENTAL CATEGORY</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Environmental Category in each of the above sub-sections is determined also making use of MCP-099 Appendix 1. The highest of the potential Environmental Categories identified is the overall Environmental Category assigned.</td>
<td></td>
</tr>
</tbody>
</table>

Environmental Mitigation measures required have been identified above and are taken into design consideration / working methods. Any further Environmental Justifications (e.g., BAT, including BPEO and BPM and/or PWMP) and should be attached.

The proposed Overall Environmental Category is:

**E1 □ E2 □ E3 □**

<table>
<thead>
<tr>
<th>Name: ...............................</th>
<th>Signature: ...............................</th>
<th>Date: ...............................</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environment SQEP</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For category E1 modifications, two additional signatures are required:

1) Confirm awareness of the modification proposal.

<table>
<thead>
<tr>
<th>Name: ...............................</th>
<th>Signature: ...............................</th>
<th>Date: ...............................</th>
</tr>
</thead>
<tbody>
<tr>
<td>EHSS&amp;Q Manager</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

2) Confirm that the modification proposal has been reviewed by Head of Profession – Environment, and

<table>
<thead>
<tr>
<th>Name: ...............................</th>
<th>Signature: ...............................</th>
<th>Date: ...............................</th>
</tr>
</thead>
</table>
Appendix C

Stakeholder Engagement

Whilst decommissioning represents a new phase in the lifecycle of the site, Magnox Ltd remains committed to engaging with stakeholders during all phases in the process.

Regular meetings are held with the Local Community Liaison Council (LCLC). This includes elected local Parish and District Councilors, representatives from the EA and the ONR, as well as members of the general public.

There are annual public meetings held in Bradwell-on-Sea and on Mersea Island which are open to the general public and advertised through local communication networks. These are also often attended by representatives from the EA and the ONR.

Throughout the year the Local Community Liaison Council (LCLC) has continued to be the primary communication tool to engage the local community. A working group of Maldon District Council and Magnox has continued to meet in relation to issues associated with decommissioning and moving towards the socio-economic issues raised by the site’s upcoming entry to care and maintenance.

Regular meetings with the regulators (EA & ONR) are held at Bradwell site.

The role of the Nuclear Decommissioning Authority (NDA)

The Energy Act (2004) requires that the NDA must prepare a strategy for carrying out its functions and from time to time to revise that strategy. This strategy must set out the steps that the NDA proposes to take for:

- giving appropriate publicity to its responsibilities and strategy;
- explaining them both to persons having a particular interest in matters relating to the carrying out by the NDA of its functions and to the general public;
- ensuring that the NDA is kept informed at all times of the opinions about such matters of persons having such a particular interest; and
- facilitating the communication by such persons of their opinions to the NDA.

The NDA is also required to give encouragement and other support to activities that benefit the social or economic life of communities living near those sites for which it has responsibilities, including Bradwell.

The NDA’s strategy requires the NDA to review Site End States in consultation with stakeholders. The process consists of various stages of stakeholder consultation aimed at arriving at Site End State Definitions that will be reconciled with national requirements before being incorporated into the revised NDA Strategy.
### Appendix D

**Land Quality Assessment Form**

**QUESTIONS TO BE ADDRESSED WHEN APPROVING PROPOSALS FOR WORK ON SITE**

In considering proposals for work on a site (through Modifications approval or method statement approval processes), a number of questions relevant to land quality must be answered. These are set out below in a pro-forma, the layout of which may be adapted for use within an existing procedure.

<table>
<thead>
<tr>
<th>1. Does the proposed work have any potential for mobilisation of existing contaminated ground or groundwater?</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1a.</strong> Will the proposed work involve ‘breaking ground’ or otherwise have the potential to affect the sub-surface?</td>
</tr>
<tr>
<td>Yes/No</td>
</tr>
<tr>
<td>Such work may involve excavations, advancing of boreholes or piles, changes in ground cover, changes to surface water drainage, groundwater abstraction, ground de-watering.</td>
</tr>
<tr>
<td><strong>1b.</strong> If the answer to 1a is yes is there any existing known or suspected contaminated land that could be affected significantly by the proposed work?</td>
</tr>
<tr>
<td>Yes/No</td>
</tr>
<tr>
<td>The answer to this question shall be based on consultation of the Land Quality Map and related Index of Areas of Potential Concern in the Land Quality File, noting that indirect effects such as modification of groundwater pathways can mean that work in one area may affect contamination present in another area.</td>
</tr>
<tr>
<td>If the answer to 1b is yes give details of the mitigation measures proposed to eliminate / mitigate any potential impacts.</td>
</tr>
<tr>
<td>Proposed mitigation measures:</td>
</tr>
<tr>
<td><strong>Was specialist advice sought in answering Question 1?</strong></td>
</tr>
<tr>
<td>Yes/No</td>
</tr>
<tr>
<td>Give details of who was consulted. Give name and role, e.g. Intelligent Customer (land contamination) or Environmental SQEP.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2. Does the proposed work have any potential to result in exposure of those undertaking the work to contaminants at levels that should be taken into account in the Method Statements and Risk Assessments for the work?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
</tr>
<tr>
<td>This question should be answered with reference to the Land Quality File. If yes, detail the measures to be put in place to provide adequate protection of the workers.</td>
</tr>
<tr>
<td>Proposed mitigation measures:</td>
</tr>
<tr>
<td><strong>Was specialist advice sought in answering Question 2?</strong></td>
</tr>
<tr>
<td>Yes/No</td>
</tr>
<tr>
<td>Give details of who was consulted.</td>
</tr>
<tr>
<td>Give name and role, e.g. COSHH Assessor / Accredited Health Physicist:</td>
</tr>
<tr>
<td>Assessment prepared by (give name &amp; role and date):</td>
</tr>
<tr>
<td>Assessment approved by (give name &amp; role and date):</td>
</tr>
</tbody>
</table>
Appendix E

Principles for a Travel Plan

Objective

All decommissioning operations involving transport will be managed so as to minimise the environmental effects of these operations, as far as is reasonably practicable. The principles for achieving this are defined below.

Transport Management Principles

• The numbers of individual transport movements will be minimised as far as is reasonably practicable.

• Employees and contractors will be encouraged to use video and teleconferencing facilities as much as possible rather than travelling to other sites for meetings.

• Employees and contractors will be encouraged to share transport (or use public transport) when travelling to and from the Bradwell Site.

• Magnox Ltd and its contractors will be required to maintain their vehicles in a good standard of condition.

• When appropriate, vehicles leaving the site will be subject to wheel wash and inspection to ensure that earth and other material is not unduly dispersed.

• On site roads will be swept as necessary to minimise the spread of material off site and/or into drains or watercourses.

• Signage will be provided at site exits to reinforce the contract requirements on vehicle drivers.

• Where practicable, transport distances will be minimised by the use of local disposal sites, recycling companies, etc.

• Most HGV transport movements will be undertaken during normal working hours.

• HGVs will be required to exit the site through the Bradwell site main gate and, where appropriate, to follow preferred routes to and from the strategic road network.

• In the event of the need for an abnormal load to be transported, a specific plan for this movement will be developed.