

Magnox Limited

Dungeness Site

# Environmental Management Plan

OCTOBER 2014



Published in the United Kingdom by Dungeness A Site, Kent, TN29 9PP.

All rights reserved. No part of this publication may be: (i) reproduced used, dealt with, possessed or transmitted in any form or by any means, including photocopying and recording, without the written permission of the copyright holder; or (ii) used, dealt with or possessed in any way whatsoever, where such use, dealing with or possession will or may infringe any intellectual property rights of the publisher (including any trade marks, patents or patents pending, design right (registered or unregistered), know how, show how, moral rights or any licence held by the publisher with a third party).

Application for permission to reproduce, transmit, use, deal with or possess should be addressed to the publisher. Such written permission must also be obtained before any part of this publication is stored in a retrieval system of any nature.

Requests for copies of this document should be referred to: Dungeness A Site, Kent, TN29 9PP.

© Magnox Ltd

## EXECUTIVE SUMMARY

In October 2005, Magnox Electric Ltd applied to the Health and Safety Executive (HSE) for consent to decommission Dungeness A Nuclear Power Station in accordance with the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended). An environmental statement accompanied the application.

After a period of public consultation, the HSE duly granted consent in July 2006. Conditions were attached to the consent, including a condition relating to the production and maintenance of an Environmental Management Plan covering the on-going mitigation measures to prevent, reduce and, if possible, offset any significant adverse environmental effects of the decommissioning work.

This document is the 9<sup>th</sup> issue of the Dungeness A Site Environmental Management Plan and provides an update on the activities undertaken so far, in addition to the details of the agreed mitigation measures. This document will be re-issued annually as agreed with the Health and Safety Executive.

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



.....  
Paul Wilkinson

Site Director

Dungeness A

1<sup>st</sup> October 2014

<b>CONTENTS</b>	<b>PAGE</b>
1. Introduction	5
2. Scope of the Environmental Management Plan	7
3. Stakeholder Engagement	9
4. The Site and Surrounding Area	10
5. Mitigation Measures	11
6. Implementation of Mitigation Measures and Assessment of their Effectiveness	25
Appendix 1. Letter Providing Consent to Decommission and Attached Conditions	
Appendix 2. Principles for a Transport Management Plan	

## INTRODUCTION

Dungeness A Nuclear Power Station continued generating electricity until the 31<sup>st</sup> December 2006. Dungeness A Site (hereafter referred to as Dungeness A) has now, in accordance with Government Policy, entered a period of decommissioning. During this time the fuel, plant and buildings associated with electricity generation will be systematically removed. Before removal they will be maintained in a safe condition. Prior to commencement of this work Magnox Electric Ltd, the Licensee of the Site at the time (the licence was transferred to Magnox South Ltd in October 2008 and then to Magnox Ltd in 2011), was legally required to seek consent from the Health and Safety Executive (HSE) to carry out the decommissioning project.

An application was therefore made to the HSE for consent to carry out the decommissioning project at Dungeness A in October 2005. In support of this application an Environmental Statement<sup>1,2</sup> was provided which assessed the impacts of the project on the environment. Following an extensive public consultation the HSE granted consent to carry out the decommissioning project at Dungeness A in July 2006, subject to certain conditions (listed in Appendix 1). Condition 2 requires the licensee to prepare an Environmental Management Plan (EMP) which shall:

- list the mitigation measures that are already identified in the Environmental Statement and evidence submitted (to the HSE) to verify information in the environmental statement;
- 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; and
- list the work activities where mitigation may be required but where assessments to identify mitigation measures will only be possible in the future.

It is a requirement of the conditions attached to the consent to describe the effectiveness of the mitigation measures over time. This EMP is therefore a living document that will be periodically reviewed and revised throughout the decommissioning project. The EMP will be reissued annually or at other intervals agreed with the HSE.

Further information on the HSE's decision to grant consent to decommission Dungeness A can be found in their decision report, which describes the content of the conditions attached to the Consent and the main reasons and considerations for the decision. Copies of the document are available from:

Health and Safety Executive  
Knowledge Centre  
Wrexham Area Office  
Unit 7 & 8 Edison Court  
Ellice Way  
Wrexham Technology Park  
Wrexham  
LL13 7YT

Tel: 0151 951 4000  
email: [knowledgecentre@hse.gsi.gov.uk](mailto:knowledgecentre@hse.gsi.gov.uk)

Or via the internet from:  
<http://www.hse.gov.uk/nuclear/nuc26.pdf>

---

<sup>1</sup> European Council Directive 85/337/EEC (as amended) sets out a framework for 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

<sup>2</sup> British Nuclear Group (2005) Dungeness A Nuclear Power Station Environmental Statement (in support of the application to decommission Dungeness A Nuclear Power Station as required by Statutory Instrument 1999 No. 2892: Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999)

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

The Site Director  
Dungeness A Site  
Romney Marsh  
Kent  
TN29 9PP

In addition to the submission of this EMP to the Health and Safety Executive (HSE), Magnox will also provide copies to the:

- Dungeness Site Stakeholder Group; and
- The Nuclear Decommissioning Authority (NDA).

This EMP can be viewed at the following locations:

- **Cheriton Library**, 64 Cheriton High Street, Cheriton, Folkestone, Kent CT19 4HB;
- **Folkestone Central Library**, 2 Grace Hill, Folkestone, Kent, CT20 1HD;
- **Hythe Library**, 1 Stade Street, Hythe, Kent, CT21 6BQ;
- **Lydd Library**, The Old School, Skinner Road, Lydd, Romney Marsh, Kent, TN29 9HN;
- **Hastings Central Library**, Bassey Institute, 13 Claremont, Hastings, East Sussex, TN34 1HE;
- **Tenterden Library**, 2 Manor Row, Tenterden, Kent, TN30 6HP;
- **New Romney Library**, 82 High Street, New Romney, Kent, TN28 8AU;
- **Ashford Central Library**, Church Road, Ashford, Kent, TN23 1QX (3 copies, 2 marked up for mobile libraries);
- **Rye Library**, 30 High Street, Rye, East Sussex, TN31 7JF;
- **Shepway District Council**, Civic Centre, Castle Hill Avenue, Folkestone, Kent, CT20 2QY; and
- **Kent County Council**, County Hall, Maidstone, Kent, ME14 1XQ.
- **Note:** Dymchurch Library is now closed but it is served by a mobile library. Two extra copies are sent to Ashford Central Library for the mobile libraries that operate from here.

## 2. SCOPE OF THE ENVIRONMENTAL MANAGEMENT PLAN

This EMP details the mitigation measures to prevent, reduce and, where possible, offset any significant adverse effects on the environment throughout the decommissioning of Dungeness A. It also includes measures that, although not associated with significant adverse effects, are nevertheless proposed. A revised strategy to decommissioning was inserted into the baseline at Dungeness A during the financial year 2011/12. This strategy has been formally approved by the Office of Nuclear Regulations (ONR). This introduces a short semi-quiescent phase, accelerates the Site into full care and maintenance and embeds Magnox strategic decommissioning programmes. As a result, the decommissioning project at Dungeness A is now divided into three phases (the first of which is now sub-divided into three phases) as follows:

- **Care & Maintenance Preparations**
  - Optimised Care & Maintenance Preparations;
  - Interim Care & Maintenance period;
  - Remaining Care & Maintenance Preparations;
- **Care & Maintenance period;**
- **Final Site Clearance.**

These phases are explained in Box 1.

This EMP is similarly structured around these three phases. This is predominantly because mitigation measures may change in the future in light of experience and developing technologies. Where mitigation measures are still to be identified, developed in more detail, or require changes, these will be described in subsequent issues of the EMP together with the reasons for any changes made. Any changes will be subject to the Consent and associated Conditions issued by the HSE on 13/7/2006 (See Appendix 1).

Environmental impacts were grouped into topic areas in the Environmental Statement, as are the mitigation measures described in this EMP (see Box 2).

### Box 1. Summary of the main decommissioning phases

- **Optimised Care & Maintenance Preparations** is the first phase of decommissioning. During this phase the focus is on hazard reduction, such as passivation and storage of Intermediate Level Waste (ILW) and bulk asbestos removal, and also preparing the site plant and systems for entry into the Interim Care & Maintenance period. This covers the period to March 2019.
- **Interim Care & Maintenance period** is a new phase where the site will be maintained in a safe, secure and compliant semi-quiescent state with no further decommissioning activities being performed, requiring reduced staff levels to support the site. This phase lasts four years. In the final year, the site ramps up in readiness for entry into the next phase.
- **Remaining Care & Maintenance Preparations** is where the site will be prepared for entry into full care and maintenance. The Reactor Buildings will remain along with the nuclear fuel pond containments, within weather shield structures, and an ILW Interim Storage Facility will house ILW waste. The boilers will remain in situ until final Site clearance. This phase is scheduled to last four years.
- **Care & Maintenance period** has been extended by seven years to 61 years. It is a quiescent period with minimal staffing and the Site maintained in a safe, secure and environmentally compliant state, with periodic inspections and walk downs. The ISF will be emptied during this time when the ILW will be transferred to the National Repository.
- **Final Site Clearance** is the final stage of decommissioning activity on Site. This involves removing the remaining structures and the clearance of any residual radioactivity to the appropriate standards, and returning the site to shingle. It is anticipated that this phase will last approximately 10 years.

### Box 2. Environmental Assessment Topics

- Air Quality and Dust;
- Archaeology and Cultural Heritage;
- Ecology;
- Geology, Hydrogeology and Soils;
- Landscape and Visual;
- Noise and Vibration;
- Socio-Economic;
- Surface Waters; and
- Traffic and Transport.

In addition to the mitigation measures, a brief description of the Dungeness A site and its surroundings is presented in this EMP.

Decommissioning work at Dungeness A is carried out on a project basis. The mitigation measures identified in the Environmental Statement of 2005 are listed in Section 6 and unless otherwise stated, these measures were successful in managing the potential environmental impacts. No changes have been required for the mitigation measures that have been implemented to date.

### 3. STAKEHOLDER ENGAGEMENT

Whilst decommissioning represents a new phase in the lifecycle of the Site, Magnox remains committed to engaging with stakeholders at all phases in the decommissioning process. Regular meetings have been held with the Dungeness Site Stakeholder Group. In addition a number of other organisations (see Box 3) will be kept informed of activities at the Site. The organisations listed in Box 3 were also involved in the public consultation process for the Environmental Statement.

As well as regular meetings with stakeholders, where appropriate, other interested parties will also be kept informed of specific decommissioning activities. Some examples are shown in Box 4.

#### Box 3. Local Stakeholders

- Shepway District Council;
- Kent County Council;
- EDF, Dungeness B Power Station;
- Environment Agency;
- Natural England;
- Kent Wildlife Trust;
- Royal Society for the Protection of Birds (RSPB) and
- Site Stakeholder Group (SSG).

#### Box 4. Examples of Additional Stakeholder Activities

- liaising with local wildlife groups, as well as Natural England and RSPB, regarding the location of bird boxes for Black Redstarts and work methodology for works undertaken on, or in close proximity to, sensitive vegetated shingle;
- informing and liaising with the Crown Estate, Natural England, RSPB and Marine Management Organisation in relation to any offshore activities; and
- informing local residents of any short-term activities that may cause a noise nuisance.

## 4. THE SITE AND SURROUNDING AREA

### Site Description

Dungeness A Power Station was commissioned in 1966. Its twin reactors and associated turbo-generators had a generating capacity of 450 megawatts (electrical) (MW(e)). The Site ceased generating on 31<sup>st</sup> December, 2006 after producing 120 TWh of electricity during 41 years of operation. It then became known as Dungeness A Site.

During 2012 the site successfully completed the defuelling of both reactors and the ONR accepted our fuel free verification declaration following a detailed audit. This involved removing 55000 fuel elements (or 610 tonnes) which were dispatched in 332 fuel flasks since the cessation of generation on 31/12/2006.

Each reactor building contains one reactor of the gas-cooled Magnox type<sup>3</sup>. Each defueled reactor is situated within a large concrete bioshield, the purpose of which was primarily to protect workers from the effects of the direct radiation from the fuelled reactors themselves. The reactor pressure vessel is of spherical shape and made from steel, contained within each pressure vessel are the graphite core and a range of monitoring and control equipment. Each reactor has four boilers which converted water to steam in order to drive the turbines located inside the Turbine Hall. Cooling of the steam to return it to water was provided by seawater passed through condensing units located on the floor of the turbine hall beneath the turbines. The cooling water intake and outfall structures are located offshore and are connected to the turbine hall by means of large underground culverts.

Other buildings and plant associated with operation of the Site include the cooling water pump house, the national grid substation, workshops, stores and offices.

### Surrounding Landscape

The Dungeness A site is located at an altitude of approximately 5.8m Above Ordnance Datum (AOD) on an extensive shingle foreland. Beyond the site, ground levels remain close to sea level for considerable distances inland. These low-lying areas include Denge Marsh, Walland Marsh and, further to the north, Romney Marsh. Vegetation on the shingle foreland is sparse, limited to low growing shingle communities, except in localised areas where scrub has developed.

### Transport Infrastructure

The main route from the strategic road network, which is the most appropriate route for heavy goods vehicles, is from the M20 at Junction 10, the A2070 to Brenzett, then the A259 through Old Romney and the B2075 to Lydd, followed by the Dungeness Road, which runs between the settlements of Lydd and Lydd-on-Sea. The site approach road is accessed from the Dungeness Road. There is no direct rail access to the site. However, there is a railhead immediately to the north of the junction of the site approach road with the Dungeness Road. The nearest rail stations for passenger services are Appledore and Rye.

### Local Watercourses

The main surface water feature is the English Channel. There is also a series of land drains, including the Dengemarsh Sewer, which drain an area to the north and west. The Dengemarsh Sewer, which is classified as a 'main river' by the Environment Agency, is maintained by the Agency for flood defence purposes running southwards to the sea, passing some 1.9km to the west of the Dungeness A site. There is also a series of gravel pits to the north and north-west of the site, the closest being Long Pitt, located approximately 800m north of the site.

### Geology and Hydrogeology

The Dungeness A site is underlain by gravel deposits (the Denge Gravels), which constitute one of the largest shingle formations in Europe, with sand deposits (Marine Sands) lying beneath the shingle. The uniqueness of the

---

<sup>3</sup> The term 'magnox' refers to the first generation of gas-cooled nuclear reactors used for electricity generation. It is derived from the cladding material (magnesium non-oxidising alloy) that surrounds each individual uranium metal fuel element.

gravel deposits is a factor in the Site of Special Scientific Interest (SSSI) designation for the area around the power station Site. Siltstones, fine-grained sandstones and mudstones lie at depth.

There are two Minor Aquifers beneath Dungeness A, of which the uppermost is the most important. This upper aquifer comprises the Denge Gravels but also the underlying Marine Sands. This aquifer has been extensively developed for water supply, being abstracted by Affinity Water.

### Sensitivity of the Receiving Environment

The nearest settlements are Dungeness village to the east of the Site, Lydd-on-Sea to the north and the larger town of Lydd, 6km to the north-west.

The Dungeness A Site lies within the Dungeness Special Landscape Area (SLA). The Kent Downs and High Weald Areas of Outstanding Natural Beauty (AONB) lie to the north and west of the Site.

The following Sites of nature conservation interest are located within 10km of Dungeness:

- Dungeness, Romney Marsh & Rye Bay Site of Special Scientific Interest (SSSI)<sup>4</sup>;
- Dungeness to Pett Level Special Protection Area (SPA);
- Dungeness Special Area of Conservation (SAC);
- Dungeness proposed Ramsar Site (conservation of wetland);
- Dungeness National Nature Reserve (NNR);
- Kent Special Landscape Area (SLA); and
- Romney Marsh Local Landscape Area.

Dungeness, Romney Marsh & Rye Bay SSSI is located to the north and north-east of the licensed site including a small northern and a separate small southern part of the Dungeness A Site itself. The SSSI is principally designated for its nature conservation value and geological importance as the largest shingle structure in the UK<sup>5</sup>. The site is particularly valued for its natural plant communities, and its invertebrate interest. Dungeness SAC is designated for its Annex I habitats, including annual vegetation of drift lines and perennial vegetation of stony banks, and for an Annex II species, great crested newt, which is known to occur in the water bodies (gravel pits) over 1km from the boundary of the licensed site. No part of the Dungeness A site is SAC.

The nearest Scheduled Monument is the Acoustic Listening devices located near Lade. There are also no Listed Buildings on the Dungeness A Site. However, adjacent to the Site, the New and Old Lighthouse and Lighthousemen's Dwellings are Listed Grade II buildings. There are no parks or gardens of historic interest on or adjacent to the power station. The nearest is at Port Lympne to the west of Hythe. There are no registered historic battlefields in Kent.

## 5. MITIGATION MEASURES

There are no changes to the mitigation measures that were submitted in issue one of this document or Environmental Statement and reported in this Environmental Management Plan. The following tables on page 12 list the mitigation measures for each phase of the decommissioning project at Dungeness A.

Some examples of how mitigations measures have been implemented during decommissioning activities are listed in Section 6.

<sup>4</sup> As notified on 16<sup>th</sup> August 2006 under 28C of the Wildlife and Countryside Act 1981.

<sup>5</sup> The 9000ha Dungeness, Romney Marsh & Rye Bay SSSI was announced by Natural England on 16<sup>th</sup> August 2006 and unites eight existing SSSI sites (Dungeness, Walland Marsh, Cheyne Court, Romney Warren and North Lade in Kent; and Camber Sands and Rye Salting, Rye Harbour and Pett Level in East Sussex) and also includes 2.300ha of newly notified land including an area of the Dungeness A Site. For consistency with the full Environmental Statement the original designations, i.e. the designation before the amalgamation, are referred to in the tables in this Environmental Management Plan.

## CARE AND MAINTENANCE PREPARATIONS

### Mitigation measures already identified (Condition 3a)

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Air Quality and Dust</b>			
<p><b>Dust Emissions (from on-Site)</b></p> <ul style="list-style-type: none"> <li>Increase in Site dust emissions due to construction, demolition and waste/materials handling operations <i>etc.</i> which could impact on residential and industrial receptors.</li> </ul>	<p>As appropriate:</p> <ul style="list-style-type: none"> <li>Use of the Building Research Establishment, Guidance on the Control of Dust from Construction and Demolition Activities (2003)</li> <li>On-Site roads to be regularly cleaned of mud/dust deposits, including the use of re-circulating water wheel washers and road cleaners as appropriate; and sheeting of vehicles carrying potentially dusty loads.</li> <li>Minimisation of unnecessary material and waste handling as far as practicable</li> <li>Use of water sprays for external demolition activities as appropriate</li> <li>Use of water sprays during outside in-fill operations</li> <li>Avoidance of vehicular use of un-surfaced (soft) ground where possible and limits on vehicle speeds on such surfaces where it cannot be avoided</li> <li>Use of water sprays during particularly windy or dry conditions</li> <li>Use of water sprays to maintain damp surfaces during dry and windy weather (<i>eg</i> soil stockpiles, demolition rubble); or sheeting or seeding of surfaces of stockpiles of soil or other dusty materials</li> <li>Sheeting or seeding of surfaces and/or use of wind fences as appropriate</li> <li>Covering of containers and/or use of wind fences as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>The effectiveness of dust mitigation will be monitored. There are a variety of means of measuring dust deposition (<i>eg</i> sticky pads); directional monitoring will be used if possible. It may be appropriate to initiate monitoring before works commence in order to determine the background contribution to which the Site may add.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures primarily concern impacts on humans. However, their implementation will also offset impacts of dust deposition on sensitive habitats and species within and immediately adjacent to the Site. Sensitive habitats include Dungeness SSSI, NNR, SAC and SPA, and sensitive species include the Sussex Emerald Moth and its larval food plants, Early Spider Orchid, red hemp-nettle, Black Redstarts and lichens.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<ul style="list-style-type: none"> <li>Dust emissions due to use of explosives</li> </ul>	<ul style="list-style-type: none"> <li>Such activities will not be carried out under particularly dry or windy conditions, and local residents and Dungeness B will be informed in advance</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>The effectiveness of dust mitigation will be monitored. There are a variety of means of measuring dust deposition (eg sticky pads); directional monitoring will be used if possible. It may be appropriate to initiate monitoring before works commence in order to determine the background contribution to which the Site may add. Monitoring arrangements will be discussed in advance with the local authority.</li> </ul>	<ul style="list-style-type: none"> <li>It should be noted that the decision as to whether explosives are used for demolition will be confirmed upon receipt of contractor method statements. Mitigation measures will therefore be employed on a case-by-case basis.</li> <li>These mitigation measures primarily concern impacts on humans. However, their implementation will also offset impacts on habitats and species within and immediately adjacent to the Site.</li> </ul>
<p><b>Dust (road side)</b></p> <ul style="list-style-type: none"> <li>Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dust load.</li> </ul>	<p>As appropriate:</p> <ul style="list-style-type: none"> <li>Sheeting of lorries carrying dusty loads</li> <li>Provision of wheel washing for, as a minimum, heavy goods vehicles on leaving the Site</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing Site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>These mitigation measures will be considered as part of the development of the Transport Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible though not significant impacts on habitats and species adjacent to roads.</li> </ul>

**Archaeology and Cultural Heritage**

No significant adverse environmental impacts identified arising from decommissioning activities.

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Ecology</b>			
<p><b>Dungeness SSSI &amp; NNR</b></p> <ul style="list-style-type: none"> <li>HGVs straying onto verges along access road and other roads around Site.</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate signs will be put in place to advise drivers not to access verges.</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>Environmental co-ordinator to ensure information regarding the ecological value of the site is included in the site induction process.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the presence of mostly soft shingle verges, HGV drivers would be reluctant by their nature to stray onto them.</li> <li>Measures put in place to mitigate negative effects on Sussex Emerald Moth will also serve to minimise this effect.</li> </ul>
<p><b>Sussex Emerald Moth and its larval food plants</b></p> <ul style="list-style-type: none"> <li>Loss of and/or disturbance to habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Minimisation of habitat loss where practicable.</li> <li>Implementation of an agreed methodology for working on sensitive shingle habitats.</li> <li>An agreement with Natural England regarding the management of an area between the security fence and licensed Site boundary as a receptor area for larvae of this species found on site during this phase of decommissioning.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>Environmental SQEP to liaise with contract managers to ensure that contractors follow the agreed methodology for working on/adjacent to sensitive shingle areas.</li> <li>The Environmental SQEP to liaise with the training department to include information in the Site induction process regarding the ecological value of the Site. Contractors to be advised to speak with their contract manager or environmental coordinator for advice regarding working on/close to sensitive shingle areas.</li> </ul>	<ul style="list-style-type: none"> <li>Magnox Ltd to consider supporting further studies by local wildlife groups such as Butterfly Conservation, to establish which areas of the Site are more ecologically important for the Sussex Emerald Moth and their current distribution.</li> <li>An agreement with Natural England regarding the management of the area between the security fence and licensed boundary to the north has been in place for some time. Additionally this area is now part of the designated SSSI.</li> </ul>
<ul style="list-style-type: none"> <li>Incidental mortality.</li> </ul>	<ul style="list-style-type: none"> <li>Mitigation to minimise disturbance to shingle would also reduce the potential risk of incidental mortality.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>Environmental co-ordinator to ensure information regarding the ecological value of the site is included in the Site induction process.</li> </ul>	
<ul style="list-style-type: none"> <li>Dust deposition.</li> </ul>	<ul style="list-style-type: none"> <li>See dust suppression measures above under Air Quality and Dust.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>The mitigation measures are proposed also to mitigate the effects of dust on people, and other flora and fauna.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<ul style="list-style-type: none"> <li>Dust deposition</li> </ul>	<ul style="list-style-type: none"> <li>See dust suppression measures above under Air Quality and Dust.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>The mitigation measures are proposed also to mitigate the effects of dust on people, and other flora and fauna.</li> </ul>
<p><b>Red Hemp-nettle</b></p> <ul style="list-style-type: none"> <li>Loss of and/or disturbance to habitat/incidental mortality due to fence replacement.</li> </ul>	<ul style="list-style-type: none"> <li>Minimisation of areas of ground disturbance, winter working and the use of temporary trackways.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>Environmental SQEP to liaise with contract managers to ensure that contractors follow the agreed methodology for working on/adjacent to sensitive shingle areas.</li> <li>Environmental SQEP to ensure information regarding the ecological value of the Site is included in the Site induction process.</li> </ul>	<ul style="list-style-type: none"> <li>Site procedures DUN/DCC/899DD – Draft Notice Form and DUN/DCC/931DD Gaining consent to carry out work on Dungeness SSSI or protected vegetated shingle to be followed.</li> </ul>
<ul style="list-style-type: none"> <li>Dust deposition.</li> </ul>	<ul style="list-style-type: none"> <li>See dust suppression measures above under Air Quality and Dust.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>The mitigation measures are proposed also to mitigate the effects of dust on people, and other flora and fauna</li> </ul>
<p><b>Black Redstarts</b></p> <ul style="list-style-type: none"> <li>Loss of nest Sites/breeding habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Provision of additional, appropriately designed nest boxes prior to the commencement of Site works.</li> </ul>	<ul style="list-style-type: none"> <li>Nest boxes should be installed prior to the commencement of works on-Site, at the earliest opportunity (<i>ie</i> more than one breeding season before, if possible), in order to allow time for the Black Redstarts to become familiar with them before their more usual nest Sites are lost.</li> <li>Advice should be sought from an experienced ecologist/ornithologist and/or RSPB to determine suitable nest box locations</li> </ul>	<ul style="list-style-type: none"> <li>Nest box design will be based on research undertaken by the 'Black Redstart Research Group'.</li> </ul>
<ul style="list-style-type: none"> <li>Loss of foraging habitat.</li> </ul>	<ul style="list-style-type: none"> <li>Minimisation of habitat loss, where reasonably practicable. At any one time, parts of the Site will provide potentially suitable foraging habitat for Black Redstart.</li> <li>See also mitigation measures for Sussex Emerald Moth.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>Although the impact described is 'not significant' this mitigation is proposed as a matter of best practice.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<ul style="list-style-type: none"> <li>Incidental mortality/noise (including explosions) and visual disturbance.</li> </ul>	<ul style="list-style-type: none"> <li>Employee awareness programme and experienced individuals tasked with identifying active nest Sites.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>Environmental co-ordinator to ensure that periodical visual inspections are carried out for active nest Sites.</li> <li>Environmental co-ordinator to ensure this matter is also addressed through the Site induction process.</li> </ul>	<ul style="list-style-type: none"> <li>Although the impacts have been assessed as 'not significant', Black Redstarts receive some protection under the Wildlife and Countryside Act 1981, mitigation is therefore required.</li> <li>Site based Ornithologist undertakes bird surveys prior to any major works being undertaken.</li> </ul>
<p><b>Lichens</b></p> <ul style="list-style-type: none"> <li>HGVs straying onto verges of the access road.</li> </ul>	<ul style="list-style-type: none"> <li>Use of appropriate signs to inform drivers of the sensitivity of these habitats</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing Site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans</li> <li>Environmental SQEP to ensure this matter is also addressed through the Site induction process.</li> </ul>	<ul style="list-style-type: none"> <li>Due to the presence of mostly soft shingle verges, HGV drivers would be reluctant by their nature to stray onto them.</li> </ul>
<p><b>Reptiles</b></p> <ul style="list-style-type: none"> <li>Incidental mortality.</li> </ul>	<ul style="list-style-type: none"> <li>One-way reptile-proof fencing to be used to prevent reptiles from moving into working areas. Reptile-proof fencing should be installed prior to works commencing, allowing a period of time for reptiles to move out of the working areas.</li> </ul>	<ul style="list-style-type: none"> <li>This mitigation measure will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>Environmental SQEP to ensure that measures are put in place sufficiently in advance of works and that the advice of a suitably qualified and experienced person is first obtained.</li> <li>Environmental SQEP to liaise with contract managers to ensure that contractors follow the agreed methodology for working on/adjacent to sensitive shingle areas.</li> </ul>	<ul style="list-style-type: none"> <li>Although the impact with mitigation has been assessed as 'not significant', reptiles are protected under the Wildlife and Countryside Act 1981. Mitigation is therefore required.</li> <li>A reptile-proof fence was installed prior to the first major demolition works in 2012</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Geology, Hydrogeology and Soils</b>			
<ul style="list-style-type: none"> <li>Inadvertent or uncontrolled disturbance or spreading of existing contaminated soils, including movement by windblown dust, entrainment in runoff, attachment to vehicles and/or inappropriate soil handling operations.</li> </ul>	<ul style="list-style-type: none"> <li>Desk studies and Site investigation, if necessary, before works commence in order to determine the presence or absence of contamination, so that appropriate working practices can be adopted from the outset</li> <li>Controlled access to or from known or potentially contaminated working areas as appropriate</li> <li>Use of re-circulating wheel washers on HGVs leaving Site as appropriate</li> <li>See below under 'Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials'</li> <li>See also dust control mitigation measures</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>Wheel washing addresses dust, ecology, surface waters and highways impacts also.</li> </ul>
<ul style="list-style-type: none"> <li>Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground coverage.</li> </ul>	<ul style="list-style-type: none"> <li>Investigation of contaminated soils prior to removal of hard-standings or buildings/foundations (possibly by desk study alone if appropriate), with prior remediation if necessary</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>Although the impact described is 'not significant' these mitigation measures are required because they constitute good practice.</li> </ul>
<ul style="list-style-type: none"> <li>Mobilisation of existing contamination by direct rainwater infiltration due to the creation of temporary open excavations.</li> </ul>	<ul style="list-style-type: none"> <li>Desk studies and Site investigation, if necessary, before works commence in order to determine the presence or absence of contamination, so that appropriate working practices can be adopted from the outset.</li> <li>Excavation dewatering, if necessary, with monitoring and appropriate management/disposal of any waters arising.</li> <li>Tenting of exposed areas or excavations, if necessary.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans</li> </ul>	<ul style="list-style-type: none"> <li>Although the impact described is 'not significant' these mitigation measures are required because they constitute good practice</li> </ul>
<ul style="list-style-type: none"> <li>Creation of new contaminant migration pathways (eg due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).</li> </ul>	<ul style="list-style-type: none"> <li>Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS 10175 (Investigation of Potentially Contaminated Sites – Code of Practice).</li> <li>Compliance with EA Technical Report P5-065/TR (Technical Aspects of Site Investigation).</li> <li>Production of risk assessments, method statements and contingency plans.</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing Site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<ul style="list-style-type: none"> <li>Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.</li> </ul>	<ul style="list-style-type: none"> <li>Sampling and testing of soils, wastes and materials prior to storage as appropriate.</li> <li>Segregation as appropriate.</li> <li>Use of containment (eg membranes) to eliminate cross-contamination, as appropriate.</li> <li>Management of rainwater run-off from storage areas for contaminated or potentially contaminated soil, wastes and materials.</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing Site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	
<ul style="list-style-type: none"> <li>Inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or materials as in-fill materials.</li> </ul>	<ul style="list-style-type: none"> <li>Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate</li> <li>Authorised disposal of unsuitable soils, wastes and materials.</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing Site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	
<ul style="list-style-type: none"> <li>Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances.</li> </ul>	<ul style="list-style-type: none"> <li>Bunding of chemical and fuel storage according to PPG2 and PPG6.</li> <li>Appropriate protocols for chemicals and fuel handling in line with PPG6 and PPG11, with trained staff only to operate facilities.</li> <li>Emergency spill response planning according to PPG21, including spill kits kept on Site and trained staff available.</li> </ul>	<ul style="list-style-type: none"> <li>Routine control will be enforced through existing Site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning plans.</li> </ul>	
<ul style="list-style-type: none"> <li>Inadvertent effects on groundwater flow and quality due to in-fill of deep basements and the breaching of basement structures to prevent 'ponding'.</li> </ul>	<ul style="list-style-type: none"> <li>Breach of residual basement structures on one side only and/or above maximum water table only.</li> <li>If considered necessary by the EA, use of in-fill that does not exceed average permeability of <i>in situ</i> gravels.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<p>An Optioneering study is being undertaken to ascertain the most appropriate management for the large scale voids on site. The breaching of residual basement structures will be discussed at this time.</p>
<ul style="list-style-type: none"> <li>Inadvertent effects of local dewatering on groundwater resources and nearby abstractions, watercourses and Sites of conservation interest.</li> </ul>	<p>If necessary:</p> <ul style="list-style-type: none"> <li>Placement of physical barriers (eg sheet piles) and recharge barriers as appropriate (ie injection back into the ground of an equivalent volume of water to that extracted).</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans</li> </ul>	<ul style="list-style-type: none"> <li>The significance of operations and the need for mitigation measures to be discussed in advance with the EA, Affinity Water and other parties.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Landscape and Visual</b>			
<ul style="list-style-type: none"> <li>Light spill.</li> </ul>	<ul style="list-style-type: none"> <li>Any new lighting to be installed on site should be directional lighting.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>The impact associated with any additional lighting on site has been assessed as 'not significant', however this mitigation measure is proposed as a measure of best practice, in order to contain the extent of illumination to those areas which are intended to be lit only.</li> </ul>
<b>Noise and Vibration</b>			
<b>Local residential properties, recreational areas &amp; industrial receptors</b>			
<ul style="list-style-type: none"> <li>General changes to noise directly from the Site and associated changes in traffic.</li> </ul>	<ul style="list-style-type: none"> <li>Use of noise barriers/screens around work areas.</li> <li>Use of equipment fitted with effective silencers where practicable.</li> <li>Appointment of a site contact to whom complaints/queries about construction/demolition activity can be directed - any complaints to be investigated and action taken where appropriate.</li> <li>Local residents informed of exceptional activities.</li> <li>No potentially significant external working outside of normal working hours without prior agreement with the local authority.</li> <li>All construction activity to be undertaken in accordance with good practice as described by British Standard 5228-2:2009 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.</li> </ul>	<ul style="list-style-type: none"> <li>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	
<ul style="list-style-type: none"> <li>Noise &amp; vibration caused by explosive demolition (if used).</li> </ul>	<ul style="list-style-type: none"> <li>Use of good blasting practice and warning members of the public and the operators of Dungeness B in advance of demolition activities using explosives.</li> </ul>	<ul style="list-style-type: none"> <li>As above.</li> </ul>	<ul style="list-style-type: none"> <li>See also Dust emissions due to use of explosives.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Socio-economic</b>			
<p><b>Direct Employment</b></p> <ul style="list-style-type: none"> <li>• Long-term loss of jobs.</li> </ul>	<ul style="list-style-type: none"> <li>• Magnox Ltd will attempt to re-deploy affected staff, provide opportunities for early retirement &amp; support staff re-training/re-skilling.</li> <li>• Magnox Ltd will encourage its contractors to make use of local labour, equipment and services as far as practicable.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractors will be provided with a list of local companies known to be capable of involvement as sub-contractors.</li> </ul>	
<b>Surface Waters</b>			
<p><b>Turbid Water</b></p> <ul style="list-style-type: none"> <li>• Changes in sea water quality due to the potential release of turbid and/or contaminated water from decommissioning activities on the Site.</li> </ul>	<p>Where necessary:</p> <ul style="list-style-type: none"> <li>• Wetting down (eg excavation or construction/demolition areas) to prevent windblown spread of dust into locations where subsequent washing into surface water drains would be likely, and appropriate management of wastewater arising</li> <li>• 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</li> <li>• Sheeting or seeding of any stockpiles of soil or potentially contaminating materials</li> <li>• Careful design and siting of spoil mounds as necessary to manage run-off, including use of low walls around such mounds if appropriate</li> <li>• See also measures under Geology, Hydrogeology and Soils</li> </ul>	<ul style="list-style-type: none"> <li>• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans</li> </ul>	<ul style="list-style-type: none"> <li>• Wheel washing addresses dust, ecology, geology etc. and highways impacts also.</li> </ul>
<ul style="list-style-type: none"> <li>• Changes in sea water quality due to minor spills and leaks of non-radioactive substances, if they occur.</li> </ul>	<ul style="list-style-type: none"> <li>• Careful siting of concrete plant and fuel/chemical handling facilities according to EA Pollution Prevention Guidance (PPG) Notes 5 and 6.</li> <li>• Bunding of chemical and fuel storage according to PPG2, PPG5 and PPG6.</li> <li>• Appropriate protocols for chemicals and fuel handling in line with EA PPG6, with trained staff only to operate facilities.</li> <li>• Emergency/spill response planning according to PPG21, including spill kits kept on Site and trained staff available at all times.</li> </ul>	<ul style="list-style-type: none"> <li>• Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> </ul>	<ul style="list-style-type: none"> <li>• The existing oil separation facilities on the surface water drainage system will also provide some protection.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Traffic and Transport</b>			
<ul style="list-style-type: none"> <li>Impacts on safety <i>etc.</i> due to decommissioning traffic.</li> </ul>	<ul style="list-style-type: none"> <li>A Travel Plan will be implemented with the objective of reducing the number of trips generated by the station throughout the entire decommissioning process.</li> </ul>	<ul style="list-style-type: none"> <li>Details of the mitigation measures will be considered as part of the development of the Transport Management Plan – see Appendix 2.</li> </ul>	
<ul style="list-style-type: none"> <li>Impacts on safety <i>etc.</i> due to mud on roads</li> </ul>	<ul style="list-style-type: none"> <li>Wheel washing of HGVs as necessary.</li> </ul>	<ul style="list-style-type: none"> <li>This mitigation measure will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</li> <li>This mitigation measure will be considered as part of the development of the Transport Management Plan.</li> </ul>	<ul style="list-style-type: none"> <li>Wheel washing addresses dust, ecology, geology <i>etc.</i> and surface waters impacts also.</li> </ul>

Options to implement activities where mitigation may be required but specific options cannot yet be selected (Condition 3b)

Environmental Impact	Mitigation Measures Under Consideration
<p><b>Historic Value</b></p> <ul style="list-style-type: none"> <li>Historical value of Dungeness A.</li> </ul>	<ul style="list-style-type: none"> <li>A strategy to preserve the historical and industrial value of all Magnox reactor Sites, of which Dungeness A is one, is in progress. Magnox Ltd will provide supporting information to the NDA as required to assist in making any decisions. Potential options include the following:                     <ul style="list-style-type: none"> <li>Conducting a Royal Commission of the Historical Monuments of England (RCHME) level 1 survey</li> <li>Undertaking a comprehensive cataloguing of existing photographs and supplementing these with new photographs where appropriate</li> <li>Retaining operational records and other documents of interest</li> <li>Displaying items of plant of interest, <i>eg</i> panels from a control room, in a visitors centre and/or museum</li> </ul> </li> </ul>

Activities where mitigation may be required but it is not yet possible to identify possible mitigation measures (Condition 3c)

Environmental Impact
<ul style="list-style-type: none"> <li>There are no activities that have not been assessed for care and maintenance preparations.</li> </ul>

**CARE AND MAINTENANCE**

Environmental Impact	Mitigation Measures	Action
<ul style="list-style-type: none"> <li>During care and maintenance no significant works are planned with the possible exception of recladding the reactor buildings (should this be required). It is anticipated that the reactors would be re clad in a similar material to that used at the start of care and maintenance hence the visual impact will remain unchanged. It is also anticipated that the ISF (Interim Storage Facility) will be emptied during this time.</li> <li>No other significant adverse environmental impacts were identified during care and maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>Ecological surveys will be carried out prior to ILW removal, mitigation measures will depend upon findings of the surveys.</li> </ul>	<ul style="list-style-type: none"> <li>Dependent upon the results of surveys.</li> </ul>

**Options to implement activities where mitigation may be required but specific options cannot yet be selected (Condition 3b)**

Environmental Impact
<p>Currently no such options to implement such work activities have been identified</p>

**Activities where mitigation may be required but it is not yet possible to identify possible measures (Condition 3c)**

Environmental Impact
<p>There are no activities that have not been assessed for care and maintenance preparations.</p>

## FINAL SITE CLEARANCE

### Mitigation measures already identified (Condition 3a)

Environmental Impact	Mitigation Measures	Action	Comments
<b>Air Quality and Dust</b>			
	<ul style="list-style-type: none"> <li>Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase</li> </ul>		
<b>Archaeology and Cultural Heritage</b>			
<ul style="list-style-type: none"> <li>No significant adverse environmental impacts identified arising from decommissioning activities.</li> </ul>			
<b>Ecology</b>			
<b>Dungeness SSSI &amp; NNR and wildlife</b>	<ul style="list-style-type: none"> <li>Ecology surveys will be carried out prior to final site clearance and mitigation measures will depend upon the findings of the surveys</li> </ul>		
<b>Geology, Hydrogeology and Soils</b>			
	<ul style="list-style-type: none"> <li>Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase</li> </ul>		
<b>Landscape and Visual</b>			
<ul style="list-style-type: none"> <li>Light spill</li> </ul>	<ul style="list-style-type: none"> <li>Any new lighting to be installed on site should be directional lighting.</li> </ul>		<ul style="list-style-type: none"> <li>The impact associated with any additional lighting on Site has been assessed as 'not significant', however this mitigation measure is required as a measure of best practice, in order to contain the extent of illumination to those areas which are intended to be lit only. The visual impact of the site should be improved with the demolition of buildings and reduced lighting.</li> </ul>
<b>Noise and vibration</b>			
	<ul style="list-style-type: none"> <li>Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase</li> </ul>		

Socio-economic			
<b>Direct Employment</b>			
<ul style="list-style-type: none"> <li>Long-term loss of jobs.</li> </ul>	<ul style="list-style-type: none"> <li>Magnox Ltd will attempt to re-deploy affected staff, provide opportunities for early retirement &amp; support staff re-training/re-skilling.</li> </ul>		

Surface Waters			
	<ul style="list-style-type: none"> <li>Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase</li> </ul>		
Traffic and Transport			
	<ul style="list-style-type: none"> <li>Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase</li> </ul>		

Options to implement activities where mitigation may be required but options cannot yet be selected (Condition 3b)

Environmental Impact	Mitigation Measures Under Consideration
<ul style="list-style-type: none"> <li>No such activities have been identified.</li> </ul>	

Activities where mitigation may be required but it is not yet possible to identify possible mitigation measures (Condition 3c)

Environmental Impact
<ul style="list-style-type: none"> <li>Additional mitigation measures (or any changes required to those measures listed above) for activities during final Site clearance will be based on the technologies available at that time, decommissioning experience and any future environmental assessment deemed necessary. Ecology and traffic surveys will be repeated prior to final Site clearance; the former will include bat, protected species such as the Sussex Emerald Moth, and breeding bird surveys. This will be followed by a reconsideration of the appropriate mitigation measures.</li> </ul>

## 6. IMPLEMENTATION OF MITIGATION MEASURES AND ASSESSMENT OF THEIR EFFECTIVENESS

### Introduction

It is a requirement of the conditions attached to the consent (See Appendix 1), to implement the mitigation measures and describe their effectiveness. This chapter will discuss the measures which have been implemented, how the site measures their effectiveness in reducing significant environmental impacts and describes their use in some relevant projects which have been carried out during 2013/2014.

### Process for Implementation of Mitigation Measures

Dungeness A 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 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 Integral Management System, which will cover the requirements of ISO 9001 (Quality Assurance), ISO 14001 (Environmental Management Systems) and OHSAS 18001 (Occupational Health and Safety Management System).

For other companies working on site their contracts stipulate that all *works* shall be carried out in accordance with Dungeness A Environmental Management System (EMS), and the site environmental objectives for 2013/14. An example of the type of wording used is given in the table below:

No.	Site Environmental Objectives
1	Work to the Site's Environmental Management System.
2	Comply with all applicable legislation, pollution prevention guidance and other requirements to which the Site subscribes and, where appropriate, exceed those requirements.
3	Ensure all work is conducted in compliance with the Nuclear Reactors (Environmental Impact Assessment For Decommissioning) Regulations 1999 (EIADR) to which the Site has specific mitigation requirements set out in the Environmental Statement (ES) and Environmental Management Plan (EMP).
4	Conserve the use of natural resources on Site and monitor their use. Minimise your carbon footprint.
5	Reduce the percentage of waste going to landfill, particularly hazardous waste by applying the waste hierarchy, ie prevention, preparation for re-use, recycling or other recovery before disposing of waste to landfill.
6	Respect and protect our environment both on and off Site particularly Special Areas of Conservation (SAC), Sites of Special Scientific Interest (SSSI) and the National Nature Reserve (NNR).
7	Enhance environmental awareness and active involvement of staff, visitors and contractors on Site. Provide staff with adequate Environmental Awareness Training and information.
8	Minimise authorised discharges and prevent unauthorised discharges (eg silty water and diesel spills) to the environment.
9	Avoid causing a nuisance to our neighbours through: <ol style="list-style-type: none"> <li>i. Light pollution,</li> <li>ii. Noise pollution</li> <li>iii. Dust pollution</li> <li>iv. Other disturbance eg working after hours.</li> </ol>

It is stipulated in their contract that any *contractor* shall deliver the works in compliance with the Environmental Impact Assessment (Decommissioning Regulations) (EIADR) and in particular the Conditions detailed in Appendix 1.

The requirements above are reinforced at site meetings and training and checked through audits, inspections, visits etc.

Some examples of how mitigation measures have been implemented during decommissioning activities on site are given below.

### Process 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 contractors and the supervision provided by site staff, who ensure that mitigations and other environmental requirements 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:-

#### 1) Environmental Performance Monitoring

Environmental performance monitoring (eg 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, eg 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 with Site Environmental Monitoring Programme (SEMP).

#### 2) Visual evidence

Site photographs, taken before the start of the project provide a good visual indication of the surrounding area and help to identify potential environmental receptors in the vicinity and hence highlight mitigation measures that need to be implemented.



Visual inspections and photographs during the project can also provide an indication on effectiveness of the mitigation measure. For example, the presence of mud on roads can be an indication of insufficient wheel washing of HGVs.



**Water used during demolition for dust suppression**

#### 3) Review of Regulatory Action, Complaints and Internal Event Reporting

The Site operates a robust system of internal event reporting, where workers are encouraged to report conditions which may be unsafe or pose a threat to the environment. These are then investigated and additional controls put in place where required eg a leak was reported on a hired in diesel generator and as a result the event was reported and the fuel leak cleaned up. Additional controls whereby all generators coming on to site are inspected before entry and operational checksheets completed pre/post refuelling and weekly inspections undertaken by

Site Engineers. Learning from experience is also regularly reinforced by the internal review of complaints, event reports raised and any regulatory actions received. Learning is then shared and communicated with all other Magnox sites.

**Examples**

A major project to remove 422 tonnes of bulk asbestos (including steam tunnels) within the Turbine Hall has been on-going throughout most of the year and was completed ahead of the target date of June 2014. Overall 422 tonnes of asbestos was removed. This work was undertaken in order to facilitate the demolition of the buildings on the South Side of the site as we continued with the decommissioning process. Progress on ILW projects has also begun with the demolition of the old Laundry Building. This work was undertaken to facilitate the erection of a new ILW Conditioning Facility.

A number of work packages have also been undertaken on asset management projects. These have included the reactor buildings drain replacement, replacement of street lights and active manhole alarms. Other work packages included the thermal insulation removal on R1 and R2 steam bay.

Air Quality and Dust

As the site progressed with the demolition of buildings, tanks and structures, particulate dust monitoring was undertaken by the projects and frisbee gauges and meters were placed at strategic positions within the project area and the results were provided to the project team. In addition, baseline dust monitoring is also undertaken on site.

We also encourage staff and contractors to switch off vehicles when not in use so that discharges of greenhouse gases to atmosphere are minimised where possible.



**Dust frisbee**

Archaeology and Cultural Heritage

There is no evidence of any surviving features of archaeological interest within the licensed power station site and therefore no mitigation is required in relation to this topic.

Ecology



**Red Hemp Nettle plants on the SSSI within the sterile zone**

The annual programme of ecology monitoring within the SSSI continued during this year.

**Red Hemp Nettle (RHN):**

The monitoring results within the sterile zone showed a decrease in the Red Hemp Nettle occurrence in 2014, with the live plants present being very small, stunted and most showing signs of damage. This was due to rabbit grazing in some areas but a large number of dead stems were found across another area with only a very occasional plant having some living foliage. As an annual plant, it was clear that Red Hemp Nettle plants had successfully germinated in good numbers across this area and the conclusion drawn by the contractor was that the drift of herbicide from the adjacent sprayed areas had probably caused the mass eradication of Red Hemp Nettle plants in this area.

**Sussex Emerald Moth (SEM):**

In addition to the on-going routine monitoring programme for the SEM, Magnox along with other local landowners, have been working with Natural England, Butterfly Conservation and the Romney Marsh Countryside Partnership to grow wild carrot in trial areas, and their efforts have been worthwhile with moth larvae recorded in each of the plots. This project was established with the aim of increasing the SEM populations within the Dungeness area (outside of the site's compound), as despite the on-going monitoring undertaken by Magnox and EDF, survey results had demonstrated a progressive decline over the past three years of SEM larvae.

Dungeness A is fully committed to the SEM Partnership Project and, in conjunction with Natural England have:

- Maintained the fenced SEM food plant protected area on our SSSI land. The area is about 400m<sup>2</sup>;
- Financed the preparation of the area by disturbance and seeding with wild carrot. (SEM food plant);
- Financed the annual SEM survey of the whole of the SSSI including the new fenced area.



Rabbit proof fence erected on the SSSI as part of the Partnership Project

**Birds:**



An example of one of the deterrents placed on the roof to deter nesting birds

The site endeavour to avoid work during the bird nesting season as all wild birds are protected under the Wildlife and Countryside Act 1981 whilst they are actively nesting or roosting however this is not always a viable option.

This year several buildings were due to be demolished during the bird nesting season and due to the potential problems envisaged, bird prevention measures were introduced to deter the nesting birds and therefore reduce the risk of disturbance and potential delays in demolition. The deterrents

employed included agricultural bangalores, decoy falcons, kites, audible deterrents and regular inspections of areas. Several bird surveys were also undertaken throughout the works and the neighbours on the Dungeness estate were informed of these measures prior to them being erected. The

deterrents employed were generally found to be effective.

The only instance where delays to the project occurred where when the removal of one of the surge tanks from the Turbine Hall deplant had to be delayed due to the discovery of a herring gull's nest which was found underneath the tank. On discovery, the working party stopped work, informed the environment team and it was then agreed to delay removal of the tank to a later date.

**Bats:**

Prior to demolition, a bat survey was undertaken this year to ascertain whether the Turbine Hall and surrounding structures would provide suitable habitat for bats. The survey concluded that the structures weren't suitable and therefore the presence of bats could be excluded.

Geology, Hydrogeology and Soils



Infill material in one of the site voids

Due to the demolition of several buildings, there were a number of excavation projects undertaken this year. The material arising from the demolition of buildings will be re-used on site to infill suitable voids. This material is subject to a testing regime to determine whether it meets the inert Waste Acceptable Criteria. A Materials Management Plan was prepared according to the requirements of the (CL:AIRE), *Definition of Waste: Development Industry Code of Practice* which was submitted to the Environment Agency and Planning Authority.

In accordance with the Dungeness A Land Quality Strategy, a programme of Land Quality Survey monitoring and characterisation is undertaken. Collected samples are sent for analysis at Magnox approved, UKAS accredited testing laboratories. Duplicate samples are also taken at a frequency recommended by the Contractor and approved by the site.

Sampling and analysis of groundwater and soils (shingle) is periodically carried out to address recommendations made in the Land Quality Strategy document.

A site-wide Groundwater Quality Assessment and update of Areas of Potential Concern Index was also undertaken. This involved an assessment to cover the whole of the Land Required for Operational Purpose (LROP) and to consider the full range of potential radioactive and non-radioactive contaminants collected in routine monitoring to date.

The site will maintain and monitor appropriate arrangements for the control of work with potential implications associated with contaminated land.

Other mitigation methods employed to prevent land contamination are the provision and maintenance of emergency spill kits/equipment and training to relevant personnel, inspection and maintenance of diesel, oil and chemical tanks and the inspection and maintenance of oil interceptors.

### Landscape and Visual

There have been some changes in the Dungeness sky line this year due the demolition of the ancillary buildings adjacent to the Turbine Hall however the biggest visual change will occur when the Turbine Hall structure is demolished (which is planned for December 2014). This will dramatically alter the Dungeness skyline; the progress of this will be communicated to our stakeholders by a number of means including the SSG (Site Stakeholder Group) meetings.

### Noise and Vibration

All noise generating activities are normally restricted to normal office hours 07.30 -17.00. Any potentially noisy activities are minimised where possible and all work is undertaken within the requirements of the Control of Noise at Work Regulations.

Any work conducted near the site boundary is assessed for the potential to generate noise and subsequent nuisance to our neighbours.

### Socio-Economic

As the site continues to move through transition, changes to staff structures have occurred culminating in the reduction of personnel from 257 in 2013 to 242 in 2014 (these figures include agency and contractor supplied workers). These reductions can be attributed to a decrease in staff numbers due to leavers on severance or early retirement and staff who have been redeployed to other Magnox sites.

Magnox is committed to providing and enabling socio-economic support for the communities in which it operates and the most recent recipient of Magnox support is the Marsh Academy Community Hub (MACH) where £43,000 over three years for the Apprentices on the Marsh project which will see the MACH become an accredited centre for apprentice training by working along businesses and young people to offer apprenticeships closer to home therefore reducing travel time and costs. This investment, through the Magnox socio-economic scheme is in line with the Company aim to mitigate the impact on the community of decommissioning Dungeness A.

Another major project supported by Magnox is the Business Incubation Centre in New Romney where £99,709 from Magnox over three years, along with funding from other partners, will see business support and office accommodation offered to fledgling businesses.

### Surface Water

Following on from some events within Magnox in early 2013, a mandatory assessment on all site drains was conducted. This involved the following:

- undertaking internal and external inspections of all drain systems to establish the actual condition of pipework;
- the route of the drain pipework;
- confirming that it was recorded correctly on site drawings and plans;
- that no unknown cross connections were present;
- that lining materials and coatings were intact;
- to confirm connections to appropriate separation systems were fitted;
- to confirm no collapse or crushing was evident from roadway and building movement.

This substantial package of work led to a number of actions and recommendations, some of which have already been completed and others are progressing well.

The site management procedures prevent the risk of pollution to surface waters from uncontrolled discharges, through leaks and spills. These ensure well managed storage areas, routine inspection and maintenance of tanks and oil interceptors, etc and implementation of an emergency plan which includes the provision of spill kits and frequent training to workers and emergency exercises. The site's internal reporting system would highlight any areas which have the potential to cause leaks or spills.

### Traffic and Transport

There is a Transport Management Plan in place (see Appendix 2).

**APPENDIX 1****LETTER PROVIDING CONSENT TO DECOMMISSION AND ATTACHED  
CONDITIONS****ANNEX 7 Consent and conditions**Decommissioning Project Consent No.113<sup>th</sup> July 2006**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)

**DUNGENESS A 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 project<sup>9</sup> 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, and 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:

Signed

For and on behalf of the  
Health and Safety  
Executive

Dr S. L. Creswell

A person authorised to act in that behalf

---

<sup>9</sup> 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)

**DUNGENESS A POWER STATION**

**Condition 1**

The project 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:

- 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:

Signed

For and on behalf of the  
Health and Safety  
Executive

Dr S. L. Creswell

A person authorised to  
act in that behalf

## APPENDIX 2

### PRINCIPLES FOR A TRANSPORT MANAGEMENT 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

1. Heavy Goods Vehicles (HGV's) will be required to follow preferred routes to and from the strategic road network. From the M20 at Junction 10, the A2070 to Brenzett, then the A259 through Old Romney and the B2075 towards Lydd, followed by the Dungeness Road, which runs between the settlements of Lydd and Lydd on Sea.
2. The numbers of individual transport movements will be minimised as far as is reasonably practicable.
3. Where appropriate, vehicles leaving site will be subject to inspection to ensure that earth and other material is not unduly dispersed. Wheel washing will be used where necessary.
4. On site roads will be swept as necessary to minimise the spread of material off-site and/or into drains or watercourses.
5. Where practicable, transport distances will be minimised by the use of local disposal sites, recycling facilities etc.
6. HGV transport movements should be undertaken avoiding peak traffic times (eg not between the hours of 8.00 – 9.00 a.m. and 3.00 – 4.00 p.m. thus avoiding school pick up/drop off times).
7. Magnox Ltd and their contractors will be required to maintain their vehicles in a good condition.
8. Employees and contractors will be encouraged to share transport when travelling to and from site.
9. Employees and contractors are encouraged to minimise business travel where practicable by initially considering the need to attend off site meetings and to consider the use of other communication methods eg video conferencing facilities. If there is a pressing need to attend off site meetings, then public transport should be used in preference to private transport.
10. In the event of need for an abnormal load to be transported, a specific plan for this movement will be developed.