



# Magnox Limited



## Dungeness A Site

## Environmental Management Plan

ISSUE 15

OCTOBER 2020

## 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 15<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 2020**

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## 1. INTRODUCTION

Dungeness A Nuclear Power Station generated 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. Requests for copies of this document should be made directly to the HSE.

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

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1 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

2 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)

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**, Brassey Institute, 13 Claremont, Hastings, East Sussex, TN34 1HE;
- **Tenterden Library**, 2 Tenterden Gateway, Manor Row, Tenterden, Kent, TN30 6HP;
- **New Romney Library**, 82 High Street, New Romney, Kent, TN28 8AU;
- **Ashford Central Library**, Gateway Plus 1AS, Church Road, Ashford, Kent, TN23 1AS (3 copies, 2 marked up for mobile libraries);
- **Rye Library**, 30 High Street, Rye, East Sussex, TN31 7JF;
- **Folkestone & Hythe 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 to commence during the financial year 2016/17. This new strategy has been approved by both the NDA (Nuclear Decommissioning Authority) and the Office of Nuclear Regulations (ONR). As a result the decommissioning project is now divided into three phases as follows:

- Care and maintenance Preparations
- Care and 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

- Care & Maintenance Preparations (C&MP) 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 Care & Maintenance (C&M) period. This covers the period to June 2030. The Reactor Buildings will remain along with the nuclear fuel pond containments, within weather shield structures. The strategy for leaving the boilers in situ until Final Site Clearance has been reviewed with the intention of now removing the boilers and annexes prior to C&M entry however, this project has yet to be confirmed.
- Care & Maintenance period is expected to be 60 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.
- 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

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

- Folkestone & Hythe 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 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 the fuel free verification declaration following a detailed audit. This involved removing 55000 fuel elements (or 610 tonnes) which were dispatched in 332 fuel flasks following 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 were connected to the turbine hall by means of large underground culverts.

Other buildings and plant associated with operation of the Site included 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 or 10a, 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 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.

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<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.

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 Lighthousemens' Dwellings are Listed Grade II buildings. There are no parks or gardens of historic interest on or adjacent to the site. 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 10 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.

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<sup>4</sup> As notified on 16th 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 16th 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 etc. 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. Use of water sprays during particularly windy or dry conditions</li> </ul> <p>Use of water sprays to maintain damp surfaces during dry and windy weather (eg soil stockpiles, demolition rubble); or sheeting or</p>	<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 (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.</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>	<p>seeding of surfaces of stockpiles of soil or other dusty materials</p> <ul style="list-style-type: none"> <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>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>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<p><b>Dust (road side)</b></p> <p>Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dust load.</p>	<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>
<p><b>Archaeology and Cultural Heritage</b></p>			
<p>No significant adverse environmental impacts identified arising from decommissioning activities.</p>			
<p><b>Ecology</b></p>			
<p><b>Dungeness SSSI &amp; NNR</b></p> <p>HGVs straying onto verges along access road and other roads around Site.</p>	<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 site campaigns.</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>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<p><b>Sussex Emerald Moth and its larval food plants</b></p> <p>Loss of and/or disturbance to habitat.</p>	<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>• Contractors to be advised to speak with their contract manager or Environmental SQEP for advice regarding working on/close to sensitive shingle areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Magnox Ltd support 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>
<p>Incidental mortality.</p>	<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> </ul>	
<p>Dust deposition.</p>	<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
<p><b>Red Hemp-nettle</b></p> <p>Loss of and/or disturbance to habitat/incidental mortality due to fence replacement.</p>	<ul style="list-style-type: none"> <li>Minimisation of areas of ground disturbance, winter working and the use of temporary trackways. Natural England consents are in place for the management of Red Hemp Nettle.</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> </ul>	<ul style="list-style-type: none"> <li>Site procedures to be followed on gaining consent to carry out work on Dungeness SSSI or protected vegetated shingle to be followed.</li> </ul>
<p>Dust deposition.</p>	<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
<p><b>Black Redstarts</b> Loss of nest Sites/breeding habitat.</p>	<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 start 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 usual nest Sites are lost.</li> <li>• Advice should be sought from an experienced ecologist.</li> <li>• 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>
<p>Loss of foraging habitat.</p>	<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>
<p>Incidental mortality/noise (including explosions) and visual disturbance.</p>	<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 SQEP to ensure that periodical visual inspections are carried out for active nest sites.</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>• Magnox Ecology Advisor is consulted prior to any major works being undertaken.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<p><b>Lichens</b> HGVs straying onto verges of the access road.</p>	<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> </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> Incidental mortality.</p>	<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>			
<p>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.</p>	<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>	
<p>Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground coverage.</p>	<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>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<p>Mobilisation of existing contamination by direct rainwater infiltration due to the creation of temporary open excavations.</p>	<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>
<p>Creation of new contaminant migration pathways (eg due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).</p>	<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
<p>Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.</p>	<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>	
<p>Inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or materials as in-fill materials.</p>	<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>	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<p>Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances.</p>	<ul style="list-style-type: none"> <li>• Bunding of chemical and fuel storage according to Statutory Regulations</li> <li>• Appropriate protocols for chemicals and fuel handling in line with Statutory Regulations, with trained staff only to operate facilities.</li> <li>• Emergency spill response planning according to contingency arrangements, 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>	
<p>Inadvertent effects on groundwater flow and quality due to in-fill of deep basements and the breaching of basement structures to prevent 'ponding'.</p>	<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>	<ul style="list-style-type: none"> <li>• The current lifetime plan strategy for voids is to infill with suitable material as it becomes available through C&amp;M and FSC. It is expected that small voids will be filled during C&amp;MP as spoil is generated, however there will be a shortfall of suitable material on the sites to infill large voids; for example the turbine hall basement.</li> </ul>
<p>Inadvertent effects of local dewatering on groundwater resources and nearby abstractions, watercourses and Sites of conservation interest.</p>	<p>If necessary:</p> <ul style="list-style-type: none"> <li>• Placement of physical barriers (eg sheet piles) and recharge barriers as appropriate (<i>ie</i> 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, Water Companies and other parties.</li> </ul>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<b>Landscape and Visual</b>			
Light spill.	Any new lighting to be installed on site should be directional lighting.	<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>			

Environmental Impact	Mitigation Measure Proposed	Action	Comments
<p><b>Local residential properties, recreational areas &amp; industrial receptors</b></p> <p>General changes to noise directly from the Site and associated changes in traffic.</p>	<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>	
<p>Noise &amp; vibration caused by explosive demolition (if used).</p>	<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> Long-term loss of jobs.</p>	<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> Changes in sea water quality due to the potential release of turbid and/or contaminated water from decommissioning activities on the Site.</p>	<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 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>	<p>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans</p>	<p>Wheel washing addresses dust, ecology, geology etc. and highways impacts also.</p>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Changes in sea water quality due to minor spills and leaks of non-radioactive substances, if they occur.	<ul style="list-style-type: none"> <li>Careful siting of fuel/chemical handling facilities, correct use of drains and inspection regimes according to the EA’s pollution prevention guidance for businesses;</li> <li>Emergency/spill response planning in accordance with site contingency plans and arrangements, including spill kits kept on site and staff trained in their use.</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>	
<b>Traffic and Transport</b>			
Impacts on safety <i>etc.</i> due to decommissioning traffic.	<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>	Details of the mitigation measures will be considered as part of the development of the Transport Management Plan – see Appendix 2.	
Impacts on safety <i>etc.</i> due to mud on roads	<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>	Wheel washing addresses dust, ecology, geology <i>etc.</i> and surface waters impacts also.

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> Historical value of Dungeness A.</p>	<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:</li> <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, eg panels from a control room, in a visitors centre and/or museum</li> </ul>

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

Environmental Impact
<p>All activities have been assessed for care and maintenance preparations.</p>

**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 reclad in a similar material to that used at the start of care and maintenance hence the visual impact will remain unchanged</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 if deemed necessary, 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
Currently no such options to implement such work activities have been identified

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

Environmental Impact
All activities have been assessed for care and maintenance preparations.

**FINAL SITE CLEARANCE**Mitigation measures already identified (Condition 3a)

Environmental Impact	Mitigation Measures	Action	Comments
<b>Air Quality and Dust</b>			
Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase			
<b>Archaeology and Cultural Heritage</b>			
No significant adverse environmental impacts identified arising from decommissioning activities.			
<b>Ecology</b>			
Dungeness SSSI & NNR and wildlife	Ecology surveys will be carried out prior to final site clearance and mitigation measures will depend upon the findings of the surveys		
<b>Geology, Hydrogeology and Soils</b>			
Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase			
<b>Landscape and Visual</b>			
Light spill	Any new lighting to be installed on site should be directional lighting.		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.
<b>Noise and vibration</b>			

Environmental Impact	Mitigation Measures	Action	Comments
Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase			
<b>Socio-economic</b>			
Direct Employment – Long-term loss of jobs.	Magnox Ltd will attempt to re-deploy affected staff, provide opportunities for early retirement & support staff re-training/re-skilling.		
<b>Surface Waters</b>			
Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase			
<b>Traffic and Transport</b>			
Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase			

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

Environmental Impact	Mitigation Measures Under Consideration
No such activities have been identified.	

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

Environmental Impact
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.

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

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 2019/2020.

### 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 Integrated 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).

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 overleaf.

### 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 the Site 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 the 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.

## 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.

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.

## 7. WORK UNDERTAKEN OVER THE LAST YEAR



### Plant and Structures

A number of work packages have been undertaken on plant and structures projects over the last year including thermal insulation removal and a number of early preparations for boiler removal. The asbestos project has had its progress severely hampered by restrictions to work faces due to pipe supports being badly corroded and degraded spring hanger chains as well as the site pause for COVID-19. Over the last year thermal insulation has been removed from several areas on site including the Central Control Block, Ponds lower and upper maintenance rooms, Boilers 3 and 4 and R2A Blower Hall. The last phase of asbestos removal work is now forecast to complete by the end of the

financial year. The project has also extended the Radiation Controlled Area (RCA) to assist in scaffold handling and storage of scaffold. In addition, to reduce the requirement for Magnox to purchase further scaffold equipment there have been a number of scaffold shipments from Dungeness to Trawsfynydd, Wylfa and Hinkley.

The Plant and Structures Programme is looking to address degradation of the boiler annexes and boilers. Work is underway to confirm the site's approach with the possibility of demolishing the boiler annexes, boiler cells, blower halls, central control block and other buildings outside of the RCA, which will facilitate the removal of the boilers. Part of this work will also include the infilling of some voids on site including the cable tunnels, steam pipe tunnels and the turbine hall void. This work, if confirmed would be completed over the next ten years.

### Waste Operations

Retrieval and conditioning of resin has continued throughout the last year and all bulk resin has now been retrieved from both storage tanks. Over the last year a total of 50 DCICs have been filled and conditioned (from a total of 112) and from all the packages produced, 25 remain on site awaiting transport to Bradwell.

In addition, the Waste Operations Programme have made numerous shipments of radioactive



The DCICs transported by rail to Bradwell site

waste over the last year including processing and disposal of contaminated metallic waste (25te), contaminated combustible waste (35m<sup>3</sup>) and Very Low Level Waste (VLLW) such as contaminated asbestos insulation (291m<sup>3</sup>). They have also processed and disposed of in excess of 560te of non-radioactive waste (not including asbestos).

### Waste Projects

The Waste Projects Team has continued to develop and test plant to retrieve the remaining Intermediate Level Waste ready for storage and/or disposal. The creation of pond paint flakes when decontaminating the ponds and the introduction of the proposed Boiler Removal Project has resulted in revised strategies and additional projects to deliver the overall objective. This work is now divided between ten projects which will continue to progress over the next year:

- the Waste Transfer Area Project, which is part of the larger MCI Project, that will provide solid ILW packaging facilities
- the Borderline Wet Waste Project which will retrieve, package, transport, encapsulate and dispose of borderline Intermediate Level /Low Level wet wastes to the Low Level Waste Facility in Drigg
- the Sludge and Sand Project which provides the facilities for retrieval and packaging of Intermediate Level Waste sludge, sand and gravel
- the Cyclone Dust project to retrieve and package reactor dust
- the Desiccant and Catalyst project to retrieve and package reactor dust from the cyclone plant associated with each reactor
- the Yellow Box<sup>®</sup> Drying Stations Project to modify the existing Conditioning Facility to facilitate conditioning of other waste package types
- the Resin Residuals Project to modify the existing bulk retrieval system to retrieve and package the residual resin.
- the Wet Waste Transfer Facility (WWTF) Project which provides the facilities to transfer wet wastes from temporary containers to disposal/transport containers
- the Characterisation Project required to understand the influence of ponds paint on the previously characterised ponds sludge and BWW waste streams.
- The Relocation of the Waste Package Paint Shop Project to provide a location for painting of transport and disposal packages prior to dispatch.

### Air Quality and Dust

No significant demolition projects have been undertaken in the last year.

Work continues to ensure that equipment which contains Fluorinated Greenhouse Gases is adequately maintained and robustly controlled. There are strict legal requirements with regard to leak testing, labelling of equipment, record keeping and qualifications of personnel who work on these systems and therefore an accurate inventory is critical to the management of these systems. During the last year, a number of ageing refrigeration units have been degassed and replaced where necessary.

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

### 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.



**Equipment that contains fluorinated greenhouse gases**

## Ecology

### Red Hemp Nettle (RHN):

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

The frequency of *Galeopsis angustifolia* plants within the survey area showed a slight decline in plant numbers from the 2019 survey. However in the context of recent seasons the number of plants within the survey area remained at high level, well above the five-year average for the period 2016- 2020 (the only period where total plant numbers are available). Plants were distributed in a similar pattern to the 2019 survey with the main concentrations of plants in the eastern half of the survey area.



**Red Hemp Nettle in the sterile zone**

The total number of *Galeopsis angustifolia* plants recorded was approximately 446, this representing an insignificant 16.5% decrease in plant frequency since the 2019 survey, whilst still indicating a successful season for this annual plant species within the no-spray zone of the sterile zone. A number of recommendations were made with regard to the ongoing management of this area which will be considered in due course.

### Sussex Emerald Moth (SEM):

A total of three Sussex Emerald Moth (*Thalera Fimbrialis*) larvae were found within the landholdings of Magnox in 2020 at survey sites located within the power stations' compound and along the verges of the power stations' approach road compared to 7 in 2015, 9 in 2016, 6 in 2017, 7 in 2018 and 8 in 2019. These were recorded by undertaking timed counts in the seven Magnox-owned sites. All of these designated sites have been monitored using the same methodology since 2001 (apart from the habitat creation project which commenced in 2012). Numbers were lower across Dungeness as a whole this year due to the prolonged dry, hot weather causing most plants to fail or be severely drought-stressed, leading to a poor inflorescence rate.

### SEM Partnership Project:

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, EDF, Cemex and the MOD to grow wild carrot in trial areas, and their efforts have been worthwhile with moth larvae recorded in most of the plots. This project was established with the aim of increasing the SEM populations across the Dungeness peninsula, as despite the on-going monitoring undertaken by Magnox and EDF, survey results had demonstrated a progressive decline in SEM larvae, a trend that is now being reversed. There was a decrease in the number of larvae recorded within the fenced plot inside the Magnox compound, with two larvae recorded here during 2020 the compared to seven in 2019. 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 (about 400m<sup>2</sup>) on the SSSI land on Dungeness Site.;
- 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**



**Wire netting used as bird deterrents on site**

### Birds:

The site endeavours 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. During the COVID-19 pandemic the site went into a “paused” period with a significant reduction in site activity. This period coincided with bird nesting season and has led to a significant increase in bird activity (in particular Herring and Lesser Black-Backed Gulls). Additionally it has been confirmed during this period that a pair of peregrine falcons have also nested on the site’s roofs. This is the first confirmed occurrence on Dungeness A Site.

The advice provided by the environment team is that demolition works should be undertaken outside of the nesting season, if this is not possible various bird prevention measures are encouraged such as blocking exit and entry points and netting buildings if possible. There are occasions where, despite the employment of these controls, issues still arise. When these occur, the project will consult the environmental team for advice on a suitable way forward.

### **Geology, Hydrogeology and Soils**

There have been no major demolition projects undertaken during the last year but there is generally a shortage of demolition material to infill other voids on site as the material created by the South Side of Site demolition project was used to partially infill the Turbine Hall basement. The Turbine Hall void has been partially infilled with demolition rubble and due to the number of issues encountered at Dungeness and other Magnox sites with uncontaminated crush concrete creating high pH conditions when used in situations where it is exposed to significant groundwater infiltration, a temporary drainage arrangement is currently in place until the optimised end state is determined. Work is now being carried out to assess the options for a longer term solution.



**One of the diesel generators used during the asbestos removal project**

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.

The groundwater monitoring programme is undertaken on a six monthly basis. The latest round was conducted in December 2019 (June monitoring was delayed due to COVID-19). The objective of the monitoring is to obtain groundwater levels, in-situ water quality parameters and samples for laboratory radiochemical analysis (gross beta, tritium and high resolution gamma spectrometry). The results of previous radiochemical analysis indicated that the activity (concentration) of all of the nuclides in all of the samples were less than the required action levels, so no specific actions were recommended in relation to land quality issues.

Other mitigation methods employed to prevent land contamination include a requirement for vehicles not to park on shingle and for all oil leaks to be reported as soon as possible. This has been stipulated in a visiting drivers safety, security and environment declaration form. Also emergency spill kits are located at various locations on site and on site vehicles. Training has also been provided to relevant personnel and inspections are undertaken of tanks and generators.

## Landscape and Visual

There have been no major changes in the Dungeness sky line since the demolition of the Turbine Hall structure in 2015. A number of prefabricated buildings to facilitate waste management activities and welfare facilities have been installed however, as the eventual reduction of buildings on site progresses this will create a positive visual impact.

## Noise and Vibration

All noise generating activities are restricted to normal office hours 07.30 - 17.00 Monday - Friday. 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 of 1 April 2020, there were 151 Magnox staff based at Dungeness A; this does not include agency and contractor supplied workers.

Magnox receives funding from the Nuclear Decommissioning Authority to support socio-economic schemes across the 12 sites it manages. Last year (2019/20), Magnox contributed £1,012,536 to a variety of projects across the estate. At Dungeness, seven applications received a total of £4,671 of Good Neighbour level funding. These included:

- Turn the Tide Festival in Dymchurch, an inclusive, free two day festival offering workshops and arts based performances and sporting activities to all received £1,000.
- Light up New Romney Community Lantern Parade used their £300 to purchase materials for Lantern-making Workshops.
- The Romney Marsh Community Church made good use of the £892 awarded to buy traditional board games as well as electronic games to encourage attendance and participation in the youth club.
- South Kent MIND (supporting the Romney Marsh) bought an electronic tablet, case and sim-card for use by the Wellbeing Activities Coordinator when operating on the Romney Marsh and
- Hamstreet School Association put their £952 award towards the purchase of outdoor learning and play equipment.

During the Covid-19 pandemic, Magnox made available £25,000 per site to the local authorities to support the many community groups that carried out positive work with the most vulnerable in their areas and to help organisations deal with the pandemic wherever possible. The funding was distributed through the local authority to the Romney Marsh Community Hub which supports the Romney Marsh area. £13,500 of support has been released so far to buy food for local Foodbanks and PPE for volunteers amongst other things. Dungeness A Site also made donations of PPE and other equipment which was distributed to the William Harvey Hospital, the Romney Marsh Community Hub and Air Ambulance Kent Surrey Sussex.

## Surface Water

At present the Dungeness A sewage plant receives and processes effluent from both the Dungeness A and B Sites which is discharged into the English Channel. There are also two modular sewage plants which will service the needs of the site in future years. Dungeness B Site is progressing with plans to install its own modular sewage system but until this is installed and commissioned, Dungeness A sewage plant will continue to receive and treat the effluent from B Site before discharging to sea. Due to some performance issues experienced with both the modular plants, the site is installing tertiary filter units on both systems which will improve the overall effluent quality. Dungeness A utilised the opportunity to re-use a tertiary

filter unit from another Magnox site that no longer needed this equipment as they entered the C&M phase of their lifecycle. This is a good example of applying the principles of re-use from the waste hierarchy, instead of disposing of this equipment.



**The MAETP plant**

This year the site completed draining of the fuel cooling ponds; therefore radioactive aqueous discharges have reduced significantly. The existing Active Effluent Water Treatment Plant (AEWTP) which currently treats the site active effluent will therefore need to be decommissioned to allow the dismantling of the buildings within the Reactor Controlled Area (RCA). To facilitate this, the site installed a new Modular Active Effluent Treatment Plant (MAETP) to process the reduced volume of active effluent until the site enters a quiescent phase of C&M. Installation is now complete

and the site is progressing through inactive commissioning. A permit variation has been granted by the EA so once inactive commissioning is complete the site will move into active commissioning and operation of the plant. The requirement for a modular plant was anticipated in the original environmental statement so is not seen as a change under EIADR however the construction of a new road to facilitate this project was assessed under EIADR and was concluded as a FONSE.

A large quantity of ground water currently flows through the Turbine Hall void and it is therefore necessary to manage this by a pumping arrangement. A programme of work has been carried out to support a permit variation to include this water on the non-radiological site permit.

The site management procedures prevent the risk of pollution to surface waters from uncontrolled discharges, through leaks and spills. The Site ensures that storage areas are well managed through routine inspections, maintenance of tanks etc. Contingency plans are also in place to deal with any emergency situations which include spillages of hazardous liquids. Spill kits also deployed around the site and contingency exercises will frequently involve the deployment and use of these kits. Also 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).

## 8. FUTURE WORK

The revised and agreed Magnox Lifetime plans (LTP17) include a number of company wide strategy changes which are expected to deviate from the site's consented EIADR baselines. Work is currently ongoing to underpin the implementation of these changes and determine the detail of the site specific configurations. Once this has been defined for Dungeness, and where any change may deviate from the consented site EIADR baseline, the appropriate assessments will be made prior to any changes being implemented on the site in line with the requirements of Regulation 13 of the EIADR Regulations<sup>6</sup>.

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6 13. - (1) Where there is a change or extension of -

- (a) any project in respect of which a consent has been granted pursuant to regulation 4(b)6; or
- (b) any project which commenced prior to the coming into force of these Regulations,

which change or extension may have significant adverse effects on the environment, the licensee shall apply to the Executive for a determination as to whether the project shall be made subject to an environmental impact assessment and shall not commence or continue with the change or extension to the project or any other part of the project that the Executive may direct until such determination has been made

APPENDIX 1 - LETTER PROVIDING CONSENT TO DECOMMISSION AND ATTACHED CONDITIONS

**ANNEX 7 Consent and conditions**

Decommissioning Project Consent No.1

13<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

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<sup>9</sup> Project as defined in regulation 2

Conditions attached to Decommissioning Project Consent No.1

13<sup>th</sup> July 2006

**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 within normal working hours where possible.
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.