

# Magnox Limited



# Dungeness A Site Environmental Management Plan

ISSUE 17 OCTOBER 2022

#### **EXECTUIVE 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 17<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.

Ian Cuthbert

Site Director

Dungeness A

1<sup>st</sup> October 2022

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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) then, 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** 

<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)

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 and 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.
- The EMP is also available through the magnox pages of the .gov website

#### 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 decommissioning strategy was inserted into the Lifetime Plan baseline for Dungeness A to commence during the financial year 2016/17. This new strategy was approved by both the NDA (Nuclear Decommissioning Authority) and the Office for Nuclear Regulation (ONR). As a result the decommissioning programme is now divided into three phases as follows:

- Deferral Period Preparations
- Deferral Period
- Final Site clearance

These phases are explained in Box 1.

## Note: The "Deferral Period" was previously known as the "Care & Maintenance" Period.

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

- Deferral Period Preparations (DPP) is the first phase of decommissioning and is currently forecast to be complete by 2032. During this phase the focus is on hazard reduction such as asbestos thermal insulation removal (completed in 2021), passivation and storage of Intermediate Level Waste (ILW) and preparation of the site plant and systems for entry into the Deferral Period.
- In 2020, the Lifetime Plan Baseline was updated to include a revised strategy for removing the Boilers, Boiler Annexes, Boiler Drum Houses, Blower Halls and Central Control Block prior to entering the Deferral Period.
- Under the site's current Lifetime Plan, the Deferral Period is expected to be 60 years. It will be 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 will be the final stage of decommissioning activity on Site. This
  will involve 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.
- However, under the NDA's latest strategy published in March 2021, the NDA estate
  is now moving towards a rolling programme of decommissioning across the Magnox
  fleet with a mix of site specific strategies. The strategy for Dungeness is yet to be
  confirmed but it is anticipated that the deferral period may be removed or
  significantly reduced and the final site clearance phase brought forward to follow on
  from Deferral Period Preparations. Confirmation of this strategy is expected in the
  coming year.

## **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 5 and unless otherwise stated, these measures have been successful in managing the potential environmental impacts so far. 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 be kept informed of specific decommissioning activities. Some examples are shown in Box 4.

#### **Box 3. Local Stakeholders**

- Folkestone and 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 turbogenerators 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 gas-cooled magnox reactor<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. 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 turbines that were 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 which have since been blocked at each end.

Since 2006 a number of buildings and plant associated with operation of the site have been demolished including the cooling water pump house, the turbine hall and the old administration building. Other plant and buildings remain in place to support the site's continued operation including sewage plants, active effluent water treatment plants, stores, buildings and offices.

Decommissioning and waste management activities continue on the site. The Site's fuel storage ponds were drained of water in 2020 and bulk asbestos removal achieved in 2021.

## **Surrounding Landscape**

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 are 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.

<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.

## **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.

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.

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 surrounds the site and within the site itself the SSSI is located to the north and north-east of the and includes the beach which is adjacent to the site and forms part of the site licence boundary. 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 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 list the mitigation measures for each phase of the decommissioning project at Dungeness A.Examples of how mitigations measures have been implemented during decommissioning activities are listed in Section 6.

<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 consitency 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.

## **DEFERRAL PERIOD PREPARATIONS**

Mitigation measures already identified (Condition 3a)

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Air Quality and Dust			
Increase in Site dust emissions due to construction, demolition and waste/materials handling operations etc. which could impact on residential and industrial receptors.	<ul> <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 recirculating 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> <li>Use of water sprays to maintain</li> </ul>	<ul> <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>	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.

Environmental Impact	Mitigation Measure Proposed	Action	Comments
	damp surfaces during dry and windy weather (eg soil stockpiles, demolition rubble); or sheeting or seeding of surfaces of stockpiles of soil or other dusty materials  • Sheeting or seeding of surfaces and/or use of wind fences as appropriate.  • Covering of containers and/or use of wind fences as appropriate		

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Dust emissions due to use of explosives	Such activities will not be carried out under particularly dry or windy conditions, and local residents and Dungeness B will be informed in advance	<ul> <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> <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
Dust (road side) Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dust load.	Sheeting of lorries carrying dusty loads     Provision of wheel washing for, as a minimum, heavy goods vehicles on leaving the Site	<ul> <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>	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.
Archaeology and Cultural Herit	age		
No significant adverse environme	ental impacts identified arising from de	commissioning activities.	
Ecology			

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Dungeness SSSI & NNR HGVs straying onto verges along access road and other roads around Site.	Appropriate signs will be put in place to advise drivers not to access verges.	<ul> <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 Suitably Qualified Experienced Person (ESQEP) to ensure information regarding the ecological value of the site is included in site campaigns.</li> </ul>	<ul> <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
Sussex Emerald Moth and its larval food plants  Loss of and/or disturbance to habitat.	<ul> <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> <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> <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>
Incidental mortality.	Mitigation to minimise disturbance to shingle would also reduce the potential risk of incidental mortality.	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Dust deposition.	See dust suppression measures above under Air Quality and Dust.	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	The mitigation measures are proposed also to mitigate the effects of dust on people, and other flora and fauna.
Red Hemp-nettle Loss of and/or disturbance to habitat/incidental mortality due to fence replacement.	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.	<ul> <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>	Site procedures on gaining consent to carry out work on Dungeness SSSI or protected vegetated shingle to be followed.
Dust deposition.	See dust suppression measures above under Air Quality and Dust.	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	The mitigation measures are proposed also to mitigate the effects of dust on people, and other flora and fauna

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Black Redstarts Loss of nest Sites/breeding habitat.	Provision of additional, appropriately designed nest boxes prior to the commencement of Site works.	<ul> <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>	
Loss of foraging habitat.	<ul> <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>	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	Although the impact described is 'not significant' this mitigation is proposed as a matter of best practice.

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Incidental mortality/noise (including explosions) and visual disturbance.	Employee awareness programme and experienced individuals tasked with identifying active nest Sites.	<ul> <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> <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>
Lichens HGVs straying onto verges of the access road.	Use of appropriate signs to inform drivers of the sensitivity of these habitats	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	Due to the presence of mostly soft shingle verges, HGV drivers would be reluctant by their nature to stray onto them.

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Reptiles Incidental mortality.	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.	<ul> <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> <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
Geology, Hydrogeology and So	oils		
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.	<ul> <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>	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	
Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground coverage.	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	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	Although the impact described is 'not significant' these mitigation measures are required because they constitute good practice.

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Mobilisation of existing contamination by direct rainwater infiltration due to the creation of temporary open excavations.	<ul> <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>	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans	Although the impact described is 'not significant' these mitigation measures are required because they constitute good practice
Creation of new contaminant migration pathways (eg due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).	<ul> <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>	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.	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.	<ul> <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 runoff from storage areas for contaminated or potentially contaminated soil, wastes and materials.</li> </ul>	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.	
Inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or materials as in-fill materials.	<ul> <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>	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.	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances.	<ul> <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>	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.	
Inadvertent effects on groundwater flow and quality due to in-fill of deep basements and the breaching of basement structures to prevent 'ponding'.	<ul> <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 in situ gravels.</li> </ul>	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	The current lifetime plan strategy for voids is to infill with suitable material as it becomes available through the deferral period and FSC. It is expected that small voids will be filled during the deferral period 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.
Inadvertent effects of local dewatering on groundwater resources and nearby abstractions, watercourses and Sites of conservation interest.	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).	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	The significance of operations and the need for mitigation measures to be discussed in advance with the EA, Water Companies and other parties.

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Landscape and Visual			
Light spill.	Any new lighting to be installed on site should be directional lighting.	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	<ul> <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>

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Local residential properties, recreational areas & industrial receptors  General changes to noise directly from the Site and associated changes in traffic.	<ul> <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>	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Noise & vibration caused by explosive demolition (if used).	Use of good blasting practice and warning members of the public and the operators of Dungeness B in advance of demolition activities using explosives.	As above.	See also dust emissions due to use of explosives.
Socio-economic			
Direct Employment	Magnox Ltd will attempt to re-	Contractors will be	
Long-term loss of jobs.	<ul> <li>deploy affected staff, provide opportunities for early retirement &amp; support staff re-training/reskilling.</li> <li>Magnox Ltd will encourage its contractors to make use of local labour, equipment and services as far as practicable.</li> </ul>	provided with a list of local companies known to be capable of involvement as sub-contractors.	

Environmental Impact	Mitigation Measure Proposed	Action	Comments
Surface Waters			
Turbid Water Changes in sea water quality due to the potential release of turbid and/or contaminated water from decommissioning activities on the Site.	<ul> <li>Where necessary:</li> <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 recirculating 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>	These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans  These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans	Wheel washing addresses dust, ecology, geology etc. and highways impacts also.

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> <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>	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.	
Traffic and Transport			
Impacts on safety etc. due to decommissioning traffic.	A Travel Plan will be implemented with the objective of reducing the number of trips generated by the station throughout the entire decommissioning process.	Details of the mitigation measures will be considered as part of the development of the Transport Management Plan – see Appendix 2.	
Impacts on safety etc. due to mud on roads	Wheel washing of HGVs as necessary.	<ul> <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 etc. 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
Historic Value Historical value of Dungeness A.	<ul> <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**

All activities have been assessed for care and maintenance preparations.

## **DEFERRAL PERIOD**

Environmental Impact	Mitigation Measures	Action
<ul> <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>	Ecological surveys will be carried out prior to ILW removal if deemed necessary, mitigation measures will depend upon findings of the surveys.	Dependent upon the results of surveys.

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		
Air Quality and Dust	Air Quality and Dust				
Mitigation measures will be the	ne same as those identified in the Care and	Maintenance Preparations phase			
Archaeology and Cultural I	leritage				
No significant adverse enviro	nmental impacts identified arising from dec	commissioning activities.			
Ecology					
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				
Geology, Hydrogeology an	d Soils				
Mitigation measures will be the	ne same as those identified in the Care and	Maintenance Preparations phase			
Landscape and Visual					
Any new lighting to be installed on site should be directional lighting.  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.					
Noise and vibration					

Environmental Impact	Mitigation Measures	Action	Comments			
Mitigation measures will be the	Mitigation measures will be the same as those identified in the Care and Maintenance Preparations phase					
Socio-economic						
Direct Employment – Long- term loss of jobs.	Magnox Ltd will attempt to re-deploy affected staff, provide opportunities for early retirement & support staff retraining/re-skilling.					
Surface Waters		'				
Mitigation measures will be the	ne same as those identified in the Care and	Maintenance Preparations phase				
Traffic and Transport						
Mitigation measures will be the	ne 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 2021/2022.

## **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), ISO 45001 (Occupational Health and Safety Management System) and ISO 55001 (Asset Management).

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.

A new environmental risk assessment process was issued last year which was designed to identify at the planning stages, the environmental hazards and associated risks involved with project work on site. From the initial hazard identification, mitigations are proposed and a full environmental risk assessment is produced for the work, where appropriate. The mitigations are listed in the process and include mitigations related to our consent to decommission the site. (Section 7 provides examples where this process has been used).

## **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 effectiveness of mitigation measures are discussed with project managers and engineers. They are also assessed during regular project safety reviews and during the close out of decommissioning proposal quality plans.

The site measures the effectiveness of mitigations in a variety of ways, outlined over:-

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## 1) Environmental Performance Monitoring

Environmental performance monitoring (eg, noise and groundwater monitoring) using specialist equipment, allows the Site to understand baseline conditions and assess environmental impacts post-mitigation. 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**

Work continues to prepare for the demolition of the boiler annexes, boiler cells, blower halls, central control block and other ancillary buildings that will facilitate the removal of the boilers. This work is to address degradation of the boiler annexes and the boilers. Work is proceeding on several fronts covering enabling works as well as the design phases to inform the demolition which is not expected to occur until 2023 at the earliest. Work is progressing well to characterise the buildings set for demolition to fully understand the wastes that will be produced ahead of waste generation. In the last year, work has been completed to reroute all of the site's high voltage cables and to discharge 3000m<sup>3</sup> of treated water from the

site's cooling water culverts to prepare for grout infilling of these structures. Other major preparation works that are either underway or in advanced design phases include:, rationalisation of plant alarms and relocation of fire alarms out of the future demolition zone; preparations to infill the steam tunnels, cable tunnels and cooling water culverts; and design work for infilling the turbine hall basement to create a crane base and laydown area.

The table over shows the mitigations put in place to support this work. There have been no significant environmental events related to this work and the mitigations applied have been effective and proportionate to the hazards present.

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Work description	Environmental Hazard	Environmental Mitigation	Effectiveness/comments
Preparatory works in steam and cable tunnels	Disturbance of bats or nesting birds	A watching brief in steam and cable tunnels for bats and nesting birds.	No bats observed. Nesting pigeons found in steam tunnels. Advice provided by company ecologist to minimise impact to birds during the works.
Infill of steam tunnels, cable tunnels and cooling water culverts	Pollution of groundwater	Carry out a groundwater risk assessment for the infilling of underground structures	Due to design proposal that tunnels will be sealed prior to infilling, no significant risk to groundwater identified.
Discharge of accumulated groundwater and rain water from culverts	Pollution of surface water (English Channel)	Discharge to be controlled by operating instruction in line with surface water Environmental Risk Assessment for the works and monitoring required therein	Monitoring ongoing through discharge for pH, turbidity and copper content. Discharges made in line with the Environmental Risk Assessment. No excursions to date.
		• Ensure spill kits and drain covers are available in the work area	Spill kits and drain covers available. No spills experienced to date.
	Oil spills - pollution of ground/surface waters	Locate generators away from drains	Mitigations implemented. No spills experienced to date.
		<ul> <li>Perform prestart checks on mobile plant and equipment to identify wear or damage</li> </ul>	
		<ul> <li>All plant items containing oils, chemicals to be bunded and spill kits available</li> </ul>	
		<ul> <li>Where possible deploy drain covers prior to refuelling or working with mobile plant</li> </ul>	
	Noise – disturbance to ecology/ neighbours	Use of equipment fitted with effective silencers where practicable.	Mitigations implemented. No significant noise above baseline from activities and no complaints received.
		<ul> <li>Appointment of a site contact to whom noise complaints/queries can be directed</li> </ul>	
		No working outside of normal working hours	
Removal/remediation of active drains	Oil spills - pollution of ground/surface waters	Plant to be located away from drains on hardstanding and in a plant nappy	Mitigations implemented. No spills experienced to date.
		Ensure spill kits and drain covers are available in the work area	

## **Waste Operations**

The Waste Operations programme have completed the removal of the remaining residual Intermediate Level Resin Waste (ILW) from ST3 & ST4 (equating to 10 x MOSAIKs). The tanks have subsequently been cleaned of any residue and handed to the Ponds Programme.

In addition, numerous Low Level Waste (LLW) shipments have been made including the processing and disposal of contaminated metallic waste (14te), contaminated combustible waste (81m³) and Very Low Level Waste (VLLW) such as



The DCICs transported by rail to Bradwell site

cladding (9m<sup>3</sup>). In excess of 242 tonnes of non-radioactive waste (not including effluent/sewage) has also been processed and disposed of (including 28.3te of hazardous waste).

## **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. This work is now divided between nine projects which will continue to progress over the next year:

- **Borderline Wet Waste Project** Waste disposability documentation is nearing completion and retrieval equipment has been manufactured with Factory Acceptance Testing (FAT) underway.
- Sludge and Sand Project Sludge transfer from Settling Tank 2 to Settling Tank 1 commenced in August 2022. The team has managed to transfer approximately 3.5m<sup>3</sup> of sludge to date.
- Cyclone Dust Project & Dessicant and Catalyst Project
   — Preparation work in Lower Blowdown and Evacuation (BD&E) rooms commenced. New flooring has been installed to aid the transfer of items used for retrievals of cyclone dust. Containment tents for both projects are nearing completion; once finished, they will contain any potential airborne contamination present during retrievals.
- **Yellow Box**® **Drying Stations Project** Aims to modify the existing Conditioning Facility to facilitate conditioning of other waste package types.
- Resin Residuals Project Use of a new peristaltic pumping system allowed for the successful removal of resin from the tank internals of Settling Tank 3 and Settling Tank 4. A jet wash system was then used to remove the remaining resin deposits stuck to the internals of the tanks, leaving the tanks in a suitable state for handover.
- Wet Waste Transfer Facility (WWTF) Project There is a requirement to relocate this
  facility to support the "Boilers Down" demolition project. Before being moved it will be
  used to transfer resin and in its new location it will be used to transfer pond sludge. Resin
  retrievals are expected to commence November 2022.
- Characterisation Project Borderline Wet Waste samples have been taken and are currently being analysed; sampling to support ILW retrievals is due to commence imminently.
- New Builds Project Detailed design of the Waste Transfer Area for solid ILW processing equipment is nearing completion with small items of plant commencing manufacture. The plant will continue to be finalised and manufactured throughout 2022/23, with a plan to install within the Waste Transfer Building mid 2023/24. Three new facilities to house the relocated ILW facilities as a result of the boilers down project are progressing through detailed design. The buildings have been screened out of having to conduct an Environmental Impact Assessment, however the planning application process is still ongoing.

As most of these projects are still in the design phase, little physical work has taken place. However, Environmental Risk Assessments (ERAs) have been carried out with project-specific environmental mitigations identified which will be implemented when the works commence.

#### **Asset Care**

Some of the asset care work packs progressed over the last year include site wide fire system upgrades, design works on the improvements to the site car parks, design works for the bird netting of the reactor buildings, cladding remediation and Turbine Hall improvements.

The table over shows some of the mitigations implemented to support the work packages that have been completed this year.

Work description	<b>Environmental Hazard</b>	Environmental Mitigation	Effectiveness/comments
Installation of 3 x Welfare cabins.	Spills from plant and equipment	Locate a storage area for mobile plant away from drains and unmade ground and, if possible, indoors.Perform pre-start checks on mobile plant and equipment, to identify wear or damage.  Ensure necessary COSHH risk assessments have been completed for all equipment containing hazardous substances, and that they are available to the equipment operators.Spill kits to be stored in the area	Mitigations implemented. No spills reported
Creation of 3 offices on the first floor of the Dungness Admin Building and the installation of fire detection, additional lighting and Air Conditioning units	Leaks from plant and equipment	All equipment containing F-Gases to be placed on the Site's F-Gas Register and to be installed by a competent F-Gas contractor and all commissioning documents to be transferred to the F-Gas Responsible Engineer	Mitigations implemented. All information handed over and units added to the F-Gas Register
Installation of handrails on the North side of the Turbine Hall on the hard standing concrete platform, opposite the R1 and R2 buildings	Contamination of surface water due to cement washing	Cement sediments in the work area must not be washed down any drains but swept up and disposed of	Mitigations implemented. No issues reported.
	Mobilisation of dust generated on site, to air	Limit dust producing work if expecting high winds.	Mitigations implemented. No issues reported.
Installation of audio bird deterrent on Central Control Room roof	Noise	Sound deterrent to be set at 75 db Noise assessment to be undertaken by Noise Competent Person before the deterrent is operational	Mitigations implemented. The noise was kept to a minimum and there were no issues reported. The sound deterrent did not stop the birds who continued to nest on the Central Control Room roof. This deterrent was therefore deemed to be ineffective
Installation of bird deterrents on turnstiles	Birds	Not to be placed on the turnstiles during bird nesting season	Mitigations implemented. These deterrents have proved to be very effective as no learning capture forms (LCFs) were raised due to birds attacking personnel using the turnstiles since these deterrents were installed compared to four events raised during the 12 months prior

# 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 There were no leaks from



Equipment that contains fluorinated greenhouse gases

any systems containing F-Gas during the last year, 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.

# **Ecology**

# Red Hemp Nettle:

The annual programme of ecological monitoring within the SSSI continued this year. The frequency and distribution of Red Hemp Nettle (*Galeopsis angustifolia*) plants within the survey area



Red Hemp Nettle in the sterile zone

showed a significant increase when compared to the 2021 survey and produced the highest plant total since annual plant-count surveys began in 2016. The plants were far more widely distributed than in the previous



Red Hemp Nettle (white flowered variety) in the sterile zone

season. A few *Galeopsis angustifolia* plants were again recorded of the usually rare white-flowered variety in the vicinity of the raised conduit trench within the more western part of the no-spray zone.

The total number of *Galeopsis angustifolia* plants recorded was approximately 590, this representing a very significant 224% increase in plant frequency since the 2021 survey, indicating an exceptional level of success for this annual plant species within the no-spray zone of the sterile zone. A number of recommendatins were made with regard to the ongoing management of this area including maintaining the integrity of the no-spray zone and to extend this area a further 30 metres to the South in the eastern part of the Sterile Zone to protect the new *Galeopsis angustifolia* colonies recorded during the 2022 survey.

#### Sussex Emerald Moth:

A total of 13 Sussex Emerald Moth (Thalera Fimbrialis) larvae was recorded during timed counts carried out in 2022 from the seven Magnox-owned compound sites. This represented a 62.5% increase on the previous season and represented the highest total recorded from the Magnox-owned sites since the 2009 season. The majority of the larvae were again found in the fenced,

seeded plot within Site J1 (SEM Partnership Project below). However, there was an increase in the distribution of larvae throughout the study area with records in four separate areas, including, for the third successive year, along the inner face of the shingle bank outside the Admnistrative offices.

# SEM Partnership Project:



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

In addition to the on-going routine monitoring programme for the SEM, Magnox continue to work with Natural England, Butterfly Conservation, EDF and the Ministry of Defence to grow wild carrot in trial areas. These efforts have been worthwhile with moth larvae recorded in most of the plots. This project was established in 2011 with the aim of increasing the SEM populations across the Dungeness peninsula, as despite the ongoing monitoring undertaken by Magnox and EDF, survey results had demonstrated a progressive decline in SEM larvae, a trend that is now being reversed. For the third successive year there was an increase in the number of larvae recorded within the fenced plot inside the Magnox compound, with six larvae recorded here during 2022 compared to four in

2021. There was also a significant improvement in the incidence and distribution of the primary larval foodplant within the protected area, this now present across the entire plot. Dungeness A is fully committed to the SEM Partnership Project and, in conjunction with Natural England have:

- 1. Maintained the fenced SEM food plant protected area (around 400m²) on the SSSI land on Dungeness Site.;
- 2. Financed the preparation of the area by disturbance and seeding with wild carrot. (SEM food plant);
- 3. Financed the annual SEM survey of the whole of the SSSI including the new fenced area.

# Birds:



**Netting to prevent bird access** 

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

Bird nesting issues continue to be a problem on site. In order to try to manage the problems caused, monthly bird management meetings are held. Some of the actions undertaken include:

- the identification of suitable site-wide bird mitigation measures:
- the installation of suitable deterrents on the site turnstiles as these had been identified as problem areas for
- the implementation of a programme of drone flights to monitor bird populations;
- regular drain cleanig when safe to do so to remove any bird nesting material;
- reporting of any incidents where bird nesting issues prevent safety critical work from being undertaken and a programme of team briefs to increase environmental awareness regarding bird issues on site.

The site was issued with a licence from Natural England in April 2022 for Herring and Lesser Black Backed Gulls which granted permission to kill or take wild birds or their eggs, use a prohibited method or disturb wild birds or their nests when in use or being built for the

preservation of public health or public safety. The Site did not use this licence to undertake any of the permitted activities this year due to a number of factors:

- During bird nesting season, several reports of visibly sick birds and unexplained bird deaths. It is unconfirmed but highly likely, that this was as a result of Avian Influenza, as symptoms seen in the reported instances were consistent with the disease. There were over 50 gull deaths in total over the 2022 bird nesting season. The Environment Team did report these instances to the Department for Environment, Food and Rural Affairs (DEFRA). Following advice regarding avian flu workers were encouraged not to approach birds during this period and work was planned accordingly;
- Remedial works following storm damage to the reactor buildings in February 2022 led
  to increased human presence in areas where gulls normally set up nests. This seemed
  to deter the birds from nesting on this side of the site;

The site also holds a general licence to kill or take pigeons to preserve public health or public safety. This licence was not used during the last year mainly because there was extensive damage to buildings such as holes and loose cladding, following severe weather which resulted in pigeons being able to get into buldings and therefore until these are fixed, it was decided that culling would be ineffective.

The primary 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.

In terms of bird deterrents, metal spiders were placed on the turnstile roofs this year which were a successful mitigation measure as these areas were problematic in previous year. There are plans to net the reactor roofs next year ahead of large scale demolition projects that are planned for the future. There are also plans to block off further entrance and exit points to other areas on site to prevent birds from nesting and delaying future project work.

# Geology, Hydrogeology and Soils

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 June 2022. 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.

Infilling of the Turbine Hall Basement to support the boiler removal project is due to commence in the next year. Additional groundwater monitoring, as agreed with the Environment Agency, to support this work and ensure assertions in the risk assessment are bounding have been developed and are being implemented.

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**

A 1 in 30 year storm event (Storm Eunice) hit Dungeness site in February 2022 which changed the visual appearance of one of the reactor buildings. The south side of Reactor 2 (R2) lost a significant amount of cladding and backing panels. Other damage was evident around the site which needed to be managed on a priority basis. An initial phase to make the buildings safe was by the end of April. Work is ongoing on a second phase of works to make the building weatherproof and watertight to give the site time to agree and implement a long-term cladding solution.





Reactor 2 south face following phase 1 repairs to make the buildings safe

There have been no major changes in the Dungeness sky line since the demolition of the Turbine Hall in 2015. A number of prefabricated buildings to facilitate waste management activities and welfare facilities have been installed, removed or replaceds however, these are small buildings in keeping with the site. Overall, as decommissioning progresses the eventual reduction of buildings 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 August 2022 there were 180 Magnox staff based at Dungeness A; this does not include agency and contractor supplied workers.

The overall Magnox budget for socio-economic support for 2021/22 was £1,020,035 and at the end of the financial year (31 March 2022) £1,020,034.03 had been allocated to projects across the 12 Magnox sites with an additional £1,264,628 of socio economic support coming from the NDA.



This included £121,627 towards the Romney Marsh Business Hub – part of a £705,000 commitment over 5 years.

During the last financial year Magnox provided funding for the following projects in the area local to Dungeness A:

 Caring Altogether on the Romney Marsh (CARM) – CARM is a charity supporting older, vulnerable and lonely people living across the Romney Marsh area. Magnox provided £812 for a printer to produce documents to share with vulnerable clients who do not use or have no access to the internet thus ensuring long-term cost savings for CARM for targeted printing.

- Light up New Romney Lantern Parade £600 towards a lantern-making workshops for the community and local organisations to aid inclusivity. This workshop helped transform the event into a much anticipated parade in the winter months that draws crowds of families and others to support the shops that remain open and also publicises the groups taking part. This was the only free public event to take place in New Romney in 2021.
- Woodland @ Brookland School £1,000 for materials for planting to grow flowers and vegetables. This is a project that uses the outdoors to inspire children to learn, build resilience and independence, whilst learning about risk taking in a safe environment. This outdoor approach helps learners to develop socially, emotionally, spiritually, physically and intellectually. It creates a safe, nurturing environment for learners to try new things and take risks. The outdoors is not only used to support the learning within the classroom but also to give children the opportunity to constantly expand on their abilities by solving real-life problems, building resilience and self-confidence.
- New Romney in Bloom £950 for water bowser and planters. New Romney In Bloom Community Group (NRIB) was set up in February 2020, its main aim being to bring together like-minded volunteers from the community to create and maintain horticultural displays around the town of New Romney, providing a more welcoming and colourful environment for the benefit of residents and visitors. Supporting this group opens another avenue for people to become volunteers (all abilities welcome) or to simply enjoy the benefits of making the town a more attractive place to live or visit.
- New Romney Country Fayre £950 for arena displays. This is an annual event that celebrated its 25<sup>th</sup> anniversary in 2019. This year was very warmly welcomed back after a two year break due to COVID-19. It is a free community event helping to revitalise community spirit within the Town of New Romney. It attracts over 5,000 visitors, not only from the Romney Marsh, but also from the South-East of England. The day starts with a huge parade through the Town, ending at St Martin's Field and this is followed by entertainment in two arenas throughout the day. The event is open to all and numerous organisations and small businesses benefit by having stalls to showcase their work and raise funds. The High Street businesses also benefit during the day.
- New Romney Art Society £2,124 for for new display boards for the society's upcoming art exhibition and Festival in 2022, and for art materials to run some additional free workshops. These workshops are designed to to encourage artistic involvement and creativity, particularly for children, families and those who suffer mental and physical disabilities due to COVID-19 and feel isolated as a result. Looking to encourage and support people through the medium of art in times of stress and anxiety as well as for general pleasure and to support talent. This funding for art materials helps breakdown barriers to getting involved by providing resources.
- Folkestone & Hythe District Council £30,000 year 2 of Romney Marsh Partnership Senior Specialist. This role leads implementation of the Romney Marsh Partnership (RMP) Delivery Plan; services RMP meetings and supports project development whilst looking for opportunities that will benefit the Romney Marsh, Magnox, Shepway and Ashford.

# **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 Dungeness A site in future years. Dungeness B Site is progressing with plans to commission its own modular sewage system but until this is fully commissioned, Dungeness A sewage plant will continue to receive and treat the effluent from B Site before discharging to sea.



The MAETP plant

The existing Active Effluent Water Treatment Plant (AEWTP) which currently treats the site active effluent will 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 the deferral period, or until a point where the volume of radioactive discharges produced is no longer great enough to support treatment and discharge on site. Installation is now complete and the site is progressing through the inactive commissioning. A permit variation has been granted by the Environment Agency (EA) to permission this activity.

A large quantity of ground water currently flows through the Turbine Hall Basement and must be pumped out to the surface drainage system. This discharge is included on the site's non-radiological site permit. Also included under this discharge is the pumping of groundwater accumulating in the reactor voids to the surface drainage system. The reactor voids water was previously discharged via the AEWTP but this is no longer necessary due to the low levels of radioactivity in this discharge. This was confirmed as the preferred option for passive long-term management of the site's groundwater as a result of Best Available Technique (BAT) optioneering.

The impacts of the discharge to the receiving surface waters have been subject to risk assessment, following Environment Agency guidance and methodology. Based on conservative assumptions of the worst case discharges this assessment concluded that there would be negligible impact on water quality in the receiving surface waters of the English Channel. The effluent will continue to be monitored regularly to ensure compliance with the permit.

An EIADR assessment was prepared for this change which considered the potential for significant adverse environmental impacts from diverting the reactor void waters to the site's non-active surface drains system to enable passive long-term management of these ground water discharges. The assessment concluded that there were no adverse environmental impacts as a result of this change.

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

Work to decommission Dungeness A Site will continue to progress. The revised and agreed Magnox Lifetime Plans include a number of company wide strategy changes which are expected to deviate from the site's consented EIADR baselines. Work is ongoing to underpin the implementation of these changes and determine the detail of the site specific configurations. When strategy changes are defined for Dungeness, and where these 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>[1]</sup>.

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<sup>[1] 13. - (1)</sup> Where there is a change or extension of -

<sup>(</sup>a) any project in respect of which a consent has been granted pursuant to regulation 4(b)[1]; or

<sup>(</sup>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

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# APPENDIX 1 - LETTER PROVIDING CONSENT TO DECOMMISSION AND ATTACHED CONDITIONS

# **ANNEX 7** Consent and conditions

<u>Decommissioning Project Consent No.1</u>

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

<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;

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- 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**

- 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 offsite 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.