EXECUTIVE SUMMARY

In March 2007, Magnox Electric Ltd (now Magnox Limited) applied to the Health and Safety Executive (HSE) for consent to decommission Oldbury 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, now the Office of Nuclear Regulation (ONR), duly granted consent in February 2008. Conditions were attached to the consent, including one relating to the production and maintenance of an Environmental Management Plan covering the ongoing mitigation measures to prevent, reduce and, if possible, offset any significant adverse environmental effects of the decommissioning work.

The Plan is to be re-issued by the site licensee annually or at intervals agreed with the ONR. This document is the eleventh issue of Oldbury Site’s Environmental Management Plan.

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

Mike Heaton
Site Closure Director
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1. Introduction

Oldbury Power Station (hereafter Oldbury Site) ceased generation of electricity on 29th February 2012 and shortly thereafter began defuelling. Prior to commencing this work Magnox Limited, the Licensee of the site, is legally required to seek consent from the Office of Nuclear Regulation (ONR), formerly the Health and Safety Executive (HSE), to carry out the decommissioning project.

An application was therefore made in March 2007 to the Health and Safety Executive (HSE) (hereafter ONR) for consent to carry out the decommissioning project at Oldbury. In support of this application, an Environmental Statement\(^1,2\) was provided, which assessed the impacts of the project on the environment. Following an extensive public consultation, the ONR granted consent to carry out the decommissioning project at Oldbury in February 2008, subject to certain conditions. The conditions are listed in full within the Consent in Appendix A.

Condition number 2 requires the licensee of the site to prepare and implement an Environmental Management Plan (EMP) to cover mitigation measures to prevent, reduce and where possible offset any significant adverse effects on the environment. “The EMP shall:

- list the mitigation measures that are already identified in the environmental statement and evidence submitted [to the ONR] to verify information in the environmental statement; 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 ONR. Future submissions will include a summary of the effectiveness of the mitigation measures over the previous 12 months.

Further information on the ONR's decision to grant consent to decommission Oldbury 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.

On 22nd March 2016 the Office of Nuclear Regulation (ONR) confirmed that the site had taken reasonable steps to prove that the site is free of Magnox fuel and as a result the site was declared as a fuel free site. In accordance with Government Policy, work has now began to systematically remove (or decommission) the plant and buildings associated with electricity generation at the site.

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Copies of the decision report document are available from:

Office for Nuclear Regulation
4N.1 Redgrave Court
Merton Road
Bootle
Merseyside
L20 7HS

Email: onrenquiries@onr.gsi.gov.uk
Internet: www.onr.org.uk

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

The Communications Team
Oldbury Site
Oldbury Naite
Thornbury
South Gloucestershire
BS35 1RQ

This EMP is also available to the public at www.mangoxsites.com.
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 Oldbury. The decommissioning project at Oldbury is divided into three phases as described in Box 1.

Box 1: Summary of the decommissioning phases

- **Care and Maintenance Preparations** is the first phase of decommissioning and is expected to take about 12 years. During this phase most of the radioactive and non-radioactive plant and buildings on the site (other than the reactor building) will be dismantled and cleared.

- **Care and Maintenance** is the second phase of decommissioning which could potentially last for some decades, during which no significant dismantling will be carried out. The site will continue to be managed, monitored and maintained.

- **Final Site Clearance** is the last phase and is expected to take about 8 years. This involves the dismantling of the remaining structures on the site, including the reactors and the clearance of any residual radioactivity to the applicable standard.

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 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.

The environmental impacts and mitigation measures associated with decommissioning were grouped in the Environmental Statement according to the topic area; these are all listed in Box 2. Reference to these topic areas, the associated mitigation measures and the effectiveness of any mitigations being implemented are discussed within this EMP (see Box 2).

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 Oldbury site and its surroundings is presented in this EMP together with an overview of the types of operations that will be carried out during Care and Maintenance Preparations (the first phase of decommissioning when most of the demolition works will take place). Further details for all phases of the decommissioning project at Oldbury are presented in the Environmental Statement. Future issues of this EMP will not only provide information on any decommissioning works that have been carried out since the previous submission, but will also contain details of decommissioning works planned for the coming year, the effectiveness of any mitigation employed to date and a review of any changes required to the mitigation measures in respect to ecological changes at the site and/or experience gained.
3. Stakeholder Engagement

Whilst decommissioning represents a new phase in the lifecycle of the site, Magnox Limited remains committed to engaging with stakeholders at all phases in the process. Regular meetings have been and will continue to be held with the Site Stakeholder Group as well as other organisations (see Box 3) that will also be kept informed of activities at the site. These organisations were also involved in the public consultation process for the Environmental Statement.

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

**Box 3: Local Stakeholders**

- Oldbury Site Stakeholder Group;
- South Gloucestershire Council;
- Environment Agency;
- Natural England;
- Lower Severn Internal Drainage Board.

**Box 4: Examples of Additional Stakeholder Activities**

- Liaising with local wildlife groups regarding mitigation measures proposed for sea clover and reptiles;
- informing and liaising with Natural England, RSPB, Marine Consents and Environment Unit (MCEU) and Gloucester Harbour Trustees in preparation for removal of the tidal reservoir wall; and
- informing local residents of any short-term activities that may cause a noise nuisance.

3.1. The Role of the Nuclear Decommissioning Authority (NDA)

The Energy Act (2011) requires that the NDA must prepare a strategy for carrying out its functions and from time to time to review that strategy. This strategy must set out the steps that the NDA proposes to take for:

- “giving appropriate publicity to its responsibilities and strategy;”
- explaining them both to persons having a particular interest in matters relating to the carrying out by the NDA of its functions and to the general public;
- ensuring that the NDA is kept informed at all times of the opinions about such matters of persons having such a particular interest; and
- facilitating the communication by such persons of their opinions to the NDA.”
The NDA is also required to give encouragement and other support to activities that benefit the social or economic life of communities living near those sites for which it has responsibilities, including Oldbury.

The NDA has given its ongoing commitment to openness and transparency and to the continued development of a proper and effective stakeholder engagement framework.
4. The Site and Surrounding Area

4.1. Site Description

Commissioned in 1967, the twin reactors and associated turbo-generators of Oldbury had a capacity of up to 460 megawatts (electrical) [MW (e)]. The site ceased generation on 29th February 2012. Since fuel free verification in 2016 the main focus for the site has been decommissioning.

The reactor building comprises two reactors of the gas-cooled magnox type\(^3\). Each reactor is enclosed in a pre-stressed, post tensioned, concrete pressure vessel lined with mild steel. Oldbury was the first nuclear power station in the UK to have such a pre-stressed concrete pressure vessel. Also contained with each pressure vessel is graphite, control equipment (including control rods and associated mechanisms), and a range of monitoring equipment (e.g. to monitor temperature and pressures). The reactors were cooled using carbon dioxide. Each reactor has four boilers which were used for heat removal and steam production which in turn drove the turbines located inside the turbine hall. Cooling of the steam to return it to water was provided by water from the River Severn which had been passed through condensing units located on the floor of the turbine hall beneath the turbines. The cooling water intake and outfall structures are located offshore and are connected to the turbine hall by means of large underground culverts.

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

*Photograph 1: Oldbury Viewed from the Nature Trail*

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\(^3\) 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.
4.2. Surrounding Landscape

The Oldbury site is located in South Gloucestershire on the eastern bank floodplain of the River Severn Estuary, close to the village of Oldbury-on-Severn and approximately 15 miles north east of the centre of the city of Bristol. The nuclear licensed site boundary encloses the operational site only, with land occupied by Oldbury Technical Centre\(^4\), Oldbury Conference Centre, car parking, an orchard, meadows, scrub, and woodland now delicensed. To the north and south of the site are Silt lagoons 1, 2 and 3 respectively which were previously utilised for the settlement and deposition of estuary silt dredged from the tidal reservoir and are no longer operational. To the west of the site is the River Severn and to the east open fields.

Oldbury Site is located in the Severn Shoreline Estuary Character Area, approximately 10m Above Ordnance Datum (AOD) on the edge of the Oldbury Levels, an essentially low-lying area bounded to the east by the sharply rising ground of the Severn Ridges Character Area. Within this flat, semi-open landscape, the power station often comprises a dominant element in the view.

Photograph 2: Aerial View of the Oldbury Site and Surrounding Landscape

4.3. Transport Infrastructure

The main vehicular access route to Oldbury Site from the strategic road network is from the M5 then the A38 which runs to the east of the site. When travelling to the site from the north the site is accessed via the A38 then the B4061 through Upper Morton to Butt Lane, Oldbury Lane and then onwards via Foss Lane to the site approach road. When travelling from the south access is via the A38, Grovesend Road, Morton Way, Butt Lane, Oldbury Lane and finally Foss Lane to the site approach road. There is a limited bus service to Oldbury-on-Severn village and Shepperdine, otherwise the nearest bus services are at Thornbury. There

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\(^4\) In the Environment Statement the Oldbury Technical Centre was referred to as the Oldbury Training Centre.
is no rail access close to the site; the nearest railway stations for passenger services are at Pilning and Patchway, both stations approximately 9 miles from Oldbury but with limited services; the main line train station at Bristol Parkway approximately 11 miles from the site; or Chepstow, approximately 10 miles from Oldbury on the opposite and western side of the River Severn. Although there are provisions made for cyclists on the Site, there are no specific facilities for cyclists and pedestrians connecting the Site to any of the local villages or Thornbury town. In general, the number of staff walking or cycling to work is low.

4.4. Local Watercourses

The main surface water feature in the area is the River Severn. The estuary and the coastal floodplain is a dynamic environment that is constantly evolving by natural processes, including sediment deposition and erosion, and by human influences such as the reclamation of land. The dynamic nature of the estuary is partly due to its large tidal range – reaching in excess of 14.5 m at Avonmouth at spring tide. The River Severn Estuary has the second largest tidal range in the world. This means that large volumes of water enter the estuary, often at high speed, and rapidly change the estuary's physical character through erosion, deposition and sediment transport. Some reaches of the estuary are eroding rapidly as a consequence. However, this is not the case along the section of coastline occupied by Oldbury.

4.5. Geology and Hydrogeology

The Oldbury area is directly underlain by Estuarine Alluvium overlying the Triassic Mercia Mudstone Group (formerly known as the Keuper Marl). The upper part of the Mercia Mudstone extending beneath the water table is weathered and is characteristically comprised of lithorelicts of weak and very weak siltstone and sandstone in a red-brown clayey silt matrix. The Alluvium comprises a soft to stiff blue-grey clay, sandy in places with occasional gravel and peat layers (the latter in the northern part of the site). The mean thickness of the alluvium is some 4.0m, with site wide thickness ranging from 1.0m to 8.0m. In many of the post construction boreholes the Alluvium is shown to be overlain by fill consisting of reworked mudstone with gravel and cobbles in places. The base of Mercia Mudstone overlies the Dolomitic Conglomerate which without conforming overlies the Thornbury beds of the Devonian Lower Old Red Sandstone. These comprise red-brown sandy mudstones with subordinate sandstones.

The Oldbury area is underlain by ‘seasonally wet deep clay’ soils. Superficial geology is indicated to be Alluvium, comprising clay, silt, sand and gravel. These soils are considered likely to have low, although slightly variable permeability that is ultimately dependent upon the relative proportions of clay, sand and gravel.

The region surrounding the Oldbury site is classified by the Environment Agency as ‘Indicative Tidal Floodplain’. The Alluvial deposits and Mercia Mudstone Group beneath this area of estuarine floodplain is regarded by the EA as a ‘non-aquifer’.

4.6. Sensitivity of the Receiving Environment

The nearest settlements to the site are the villages of Shepperdine, about ½ mile to the north-east, Oldbury-on-Severn and Oldbury Naite both approximately ¼ mile to the south
and south-east respectively, and the towns of Thornbury, 3 miles to the south east and Chepstow 5 miles to the west. The city of Bristol is located approximately 6 miles to the south of the site.

The area around the site is adjacent to the River Severn and contains an intertidal zone of mudflats, sandbanks, rocky platforms, saltmarsh and grazing marsh. The estuary forms one of the most important inter-tidal zones in Britain, providing internationally important feeding grounds for over-wintering and migratory waders and wildfowl. The estuary also attracts large populations of important migratory fish species. The area is of national and local conservation importance with the following conservation designations:

- Severn Estuary Site of Special Scientific Interest (SSSI)\(^5\);
- Severn Estuary Wetland of International Importance under the Ramsar Convention\(^6\);
- Severn Estuary Special Protection Area (SPA)\(^7\); and
- Severn Estuary Special Area of Conservation (SAC)\(^8\).

The estuarine extent of the above designations is to the top of the riverbank (i.e. up to the coastal footpath) hence only the Oldbury cooling water intake jetty is included within the designations.

There are no Scheduled Ancient Monuments on the power station site. The nearest is Oldbury Camp, an iron-age fort at Oldbury-on-Severn approximately 1.5km to the south of the site. There are also no Listed Buildings on the Oldbury site. However there are a number of Grade II Listed Buildings within the village of Oldbury-on-Severn. There are no parks or gardens of historic interest on or adjacent to the site. There are no registered historic battlefields on or adjacent to the power station, the nearest is at Whitcliff Park approximately 5km to the north east of the site.

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\(^5\) Under the Wildlife and Countryside Act 1981, the Joint Nature Conservation Committee (JNCC) has a duty to notify areas of land which it considers to be ‘of special interest by reason of any of its flora, fauna or geological or physical features’.

\(^6\) Designated under the Ramsar Convention on Wetlands of International Importance especially as a waterfowl habitat.

\(^7\) Areas which support certain endangered, rare or vulnerable species (found in Annex 1 of the Directive) or regularly occurring migratory birds of European importance can be designated as SPAs under The European Communities Council Directive on the Conservation of Wild Birds (79/409/EEC), commonly referred to as the birds directive.

\(^8\) Areas containing rare or vulnerable habitats or species which are of EU interest can be designated as SACs under the European Communities Council Directive on the Conservation of natural habitats and of wild fauna and flora (92/43/EEC, amended by Directive 97/62/EC). The Severn Estuary Candidate SAC had its status approved as a SAC by the UK government from the 10\(^{th}\) December 2009.
5. Mitigation Measures

It is a requirement of the conditions attached to the consent (Appendix A), to implement the mitigation measures and describe their effectiveness over time. This chapter discusses the processes in place at Oldbury to do this. Tables 1, 2 and 3 list the mitigation measures for each phase of the decommissioning project at Oldbury.

There are no changes to the mitigation measures that were submitted in the Environmental Statement and reported in previous submissions of the Environmental Management Plan.

5.1 Implementation of Mitigation Measures

There are a number of processes at Oldbury which ensure that the identified mitigation measures are implemented when required. All decommissioning projects and modifications to plant are assessed during the project proposal stage in accordance with robust company management control procedures. A decommissioning project approval form is used to assess whether there may be any changes to the baseline and determine whether further environmental assessment and mitigation is required. An environmental risk assessment process has been implemented (Appendix B) and is applied to all work on site where there is a potential for an environmental impact. The Environmental Risk Assessment ensures that appropriate mitigations measures are implemented. This risk assessment is subject to approval and sign off by the site environmental qualified person.

In addition, there are a number of other tools to ensure that all environmental impacts are minimised. The site ensures compliance with BS EN ISO 14001:2015 by following the Company Procedure for environmental management which is itself embedded into the Integrated Management System (IMS) for Magnox Limited.

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

Alongside this EMP, Oldbury has a Biodiversity Action Plan (BAP). The BAP is a separate document which describes measures to maintain and enhance the biodiversity of the site in accordance with the local and national BAPs (LBAP and UKBAP). Oldbury's BAP aims to complement those mitigation measures as described in the Environmental Statement and EMP. Advice and assistance from local wildlife groups are be sought to assist in updating and implementing the BAP.

The latest 2017 & 2018 Oldbury BAP (issue 6) was issued in April of 2017. Information on this and previous BAP’s can be obtained from Oldbury Environment Team.

5.2 Demonstrating the Effectiveness of Mitigation Measures

The site aims to continually monitor the effectiveness of the specified mitigation measures over time, and where necessary review, in order to ensure the success of reducing significant environmental impacts. Interaction between the project and environment team from the conceptual stage through to completion of the project allows for the identification and planning of any required mitigations. It also enables appropriate supervision and practical
evaluation of the effectiveness of the mitigation measures implemented. Evaluations can provide valuable feedback on any difficulties encountered, changes required or highlight further mitigation requirements.

The site aims to measure the effectiveness of mitigations in a number of ways, these are outlined below;

1) Environmental Performance Monitoring and Surveys

Environmental performance monitoring such as dust, noise and groundwater monitoring and ecological surveys can provide both baseline and post-mitigation assessment. Post-mitigation environmental monitoring will be used to measure the effectiveness of mitigation measures for larger projects on site such as building demolition and projects involving large numbers of HGV movements. The requirement of this method of measuring effectiveness is determined on an individual project basis as appropriate.

2) Visual Evidence

Site photographs can be taken before the start of a project to provide a good visual indication of the surrounding area and help to identify potential environmental receptors in the vicinity (e.g. surface drains) and highlight the mitigations that may be required.

Visual inspections and photographs during and after the work can also provide an indication of effectiveness of a mitigation measure. For example, presence of mud on roads can be an indication of insufficient wheel washing of HGV’s.

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

Review of regulatory actions, complaints and internal event reporting is a form of reactive monitoring which can provide valuable information about where mitigations may not be effective or where further mitigations are required. The site operates a robust system of internal event reporting, where workers report conditions which are unsafe, or potentially pose a threat to safety or the environment. These reports will be investigated and rectified as appropriate. This reporting system also includes a formal process to manage any external complaints and together they could indicate effectiveness of mitigation measures. For example, complaints from members of the public on noise related activities on site can be an indication that additional silencers on equipment may be required or internal reporting on sediments entering surface water drains, may be an indication of ineffective seeding of soil stockpiles on site.

Although a ‘clean sheet’ may not necessarily mean mitigation measures are completely effective, it can indicate over a period of time that a significant environmental impact is effectively being mitigated.
5.3 Care and Maintenance Preparations

Mitigation measures already identified (Condition 3a)

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Mitigation Measure</th>
<th>Action</th>
<th>Comments</th>
</tr>
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<tbody>
<tr>
<td><strong>Air Quality and Dust</strong></td>
<td>The following best practice measures will be implemented as appropriate:</td>
<td>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.</td>
<td>These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
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<tr>
<td>Dust Emissions (from on-site)</td>
<td>• Increase in site dust emissions due to construction, demolition and waste / materials handling operations etc. which could impact on residential and industrial receptors.</td>
<td>These mitigation measures will be considered as part of the development of the Transport Management Plan.</td>
<td>These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.</td>
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<td>The following best practice measures will be implemented as appropriate:</td>
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<td>• On-site roads to be regularly cleaned of mud/dust deposits, including the use of re-circulating water wheel washers and road cleaners as appropriate; and sheeting of vehicles carrying potentially dusty loads;</td>
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<td>• Minimisation of unnecessary material and waste handling as far as practicable;</td>
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<td></td>
<td>• Use of water sprays for external demolition activities as appropriate;</td>
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<td></td>
<td>• Use of water sprays during outside in-fill operations;</td>
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<td></td>
<td>• Avoidance of vehicular use of un-surfaced (soft) ground where possible and limits on vehicle speeds on such surfaces where it cannot be avoided;</td>
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<td>• Use of water sprays during particularly windy or dry conditions;</td>
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<td></td>
<td>• Use of water sprays to maintain damp surfaces during dry and windy weather (e.g. soil stockpiles, demolition rubble); or sheeting or seeding of surfaces of stockpiles of soil or other dusty materials;</td>
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<td>• Sheetling or seeding of surfaces and/or use of wind fences; and</td>
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<tr>
<td></td>
<td>• Covering of containers and/or use of wind fences.</td>
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<tr>
<td>Dust Emissions (road side from vehicles)</td>
<td>Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dusty loads.</td>
<td>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.</td>
<td>These mitigation measures will be considered as part of the development of the Transport Management Plan.</td>
</tr>
<tr>
<td>Environmental Impact</td>
<td>Mitigation Measure</td>
<td>Action</td>
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<tr>
<td>Archaeology and Cultural Heritage</td>
<td>No significant adverse environmental impacts identified arising from decommissioning activities</td>
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<tr>
<td>Ecology</td>
<td>Badgers • Loss of foraging habitat and potential loss of setts</td>
<td>No works within 30m of a badger sett without licence from Natural England.  Provision of up to 5m width foraging zones alongside retained hedgerows and trees around those meadows to be developed for the benefit of foraging badgers.</td>
<td>• Environmental Manager to ensure that measures are put in place sufficiently in advance of the works and, if required, to ensure that a qualified and experienced ecologist is used in the process of obtaining a badger licence.  • These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
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<tr>
<td></td>
<td>Great Crested Newts/Reptiles • Incidental Mortality</td>
<td>Under licence from Natural England, fence off and clear amphibians from areas having been identified as offering suitable foraging habitat and only as and when the areas are planned to be used for materials storage and car parking: i.e. meadows 1, 2, and 3 (see Figure OLD/EC/03 of the Environmental Statement).</td>
<td>• This mitigation measure will only be implemented when an area that has been identified as suitable foraging habitat for amphibians, is planned to be used. An experienced ecologist will be employed to oversee this work and to obtain a licence from Natural England.  • Environmental Manager 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.</td>
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<td></td>
<td>Peregrine • Disturbance</td>
<td>Buildings to be checked for nesting peregrine prior to demolition to ensure compliance with the Wildlife and Countryside Act.</td>
<td>• Environmental Manager to ensure that periodic visual inspections are carried out for active nest sites using a suitably qualified ecologist.  Although the impact has been assessed as ‘not significant’, peregrines receive some protection under the Wildlife and Countryside Act 1981, mitigation is therefore required.</td>
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<td></td>
<td>Sea Clover • Loss of habitat</td>
<td>Sea clover seeds to be collected in July from individual plants within development area and scattered vegetation gaps within the foraging zones identified as mitigation for the loss of foraging habitat for badgers. Restoration of the developed areas to take place at end of Care and Maintenance Preparations phase using a similar mix of species ideally including sea clover seed, cuttings or transplants.</td>
<td>• Environmental Manager 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.</td>
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<td></td>
<td>Semi-Improved Grassland • Loss of habitat</td>
<td>If used for decommissioning, meadows 1, 2, and 3 (see Figure OLD/EC/03 of the Environmental Statement) to be re-sown with a species-mix matching the plant communities currently found and ideally containing sea clover seed or transplants.</td>
<td>• This measure will be implemented as part of the decommissioning project plan.  Although the impact has been assessed as ‘not significant’ the meadows will be re-sown as good environmental practice and to encourage biodiversity.</td>
</tr>
<tr>
<td>Environmental Impact</td>
<td>Mitigation Measure</td>
<td>Action</td>
<td>Comments</td>
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| **Severn Estuary SPA/SAC/SSSI/Ramsar**  
  • Dust deposition on coastal saltmarsh  
  • Loss of feeding habitat for birds during removal of tidal reservoir wall; and  
  • Disturbance of fish due to noise and vibration during removal of the tidal reservoir wall | Undertake removal of tidal reservoir wall at low tide only and outside of peak period when significant numbers of SPA birds may be present (December to February).  
  • Use of water sprays for external demolition activities as appropriate; | These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.  
  • Decommissioning Team to seek assistance from the Environment Team. |  |
| **Geology, Hydrogeology and Soils**  
  • 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. | 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.  
  • Controlled access to or from known or potentially contaminated working areas as appropriate.  
  • Use of re-circulating wheel washers on HGVs leaving site as appropriate.  
  • Compliance with Pollution Prevention Guidance (PPG) e.g. PPG2, 6, 11 and 21, as appropriate.  
  • See also dust control measures.  
  • See also measures under ‘Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.’ | 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, surface waters and highways impacts also. |
|  
  • Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground cover or the creation of open excavations. | Investigation of contaminated soils prior to the removal of hard-standings or buildings/foundations with prior remediation if necessary.  
  • Excavation dewatering, if necessary, with monitoring and appropriate management/disposal of any waters arising.  
  • Tenting of exposed areas or excavations, if necessary.  
  • Compliance with relevant PPGs including 11 and 21. | 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 due to changes in water table levels and consequential changes to the groundwater flow regime (e.g. due to changes in ground covering and rainwater infiltration). | Desk studies and site investigation, if necessary, to determine groundwater levels, flows and characterise the full extent of any contamination (both in the saturated and unsaturated zones).  
  • Dewatering of affected areas, if necessary, to avoid mobilisation of contaminants. Remediation may be required if contamination is significant.  
  • Better constrain current baseline conditions for groundwater quality to provide suitable comparison to any future changes. | 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 cover or the creation of open excavations. | | | |
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<tr>
<th>Environmental Impact</th>
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<th>Comments</th>
</tr>
</thead>
</table>
| **• Creation of new contaminant migration pathways** (e.g. due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).                                                                 | **• Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS 10175 (Investigation of Potentially Contaminated Sites – Code of Practice).**  
**• Compliance with EA Technical Report PS-065/TR (Technical Aspects of Site Investigation).**  
**• Production of risk assessments, method statements and contingency plans.**  
**• Compliance with relevant PPG guidelines.**  
**• Production of risk assessments, method statements and contingency plans.**  
**• Use of made ground that does not exceed average permeability of in-situ material to cause groundwater flow issues.**  
**• Placement of flow barriers and monitoring of level and flow pattern impacts, as required.**                                                                 | **• 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 temporary storage of contaminated soils, wastes or materials.**                                                                 | **• Sampling and testing of soils, wastes and materials prior to storage as appropriate.**  
**• Segregation as appropriate.**  
**• Use of containment (e.g. membranes) to eliminate cross-contamination, as appropriate.**  
**• Management of rainwater run-off from storage areas for contaminated or potentially contaminated soil, wastes and materials.**                                                                                                                                                                                                 | **• 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.**                                                                 | **• Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate.**  
**• Authorised disposal of unsuitable soils, wastes and materials.**                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | **• 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 effects on groundwater flow and quality due to infill of deep basements and the breaching of basement structures to prevent ponding.**                                                                 | **• Improved characterisation of groundwater levels and flow direction prior to the start of decommissioning.**  
**• Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate.**  
**• Puncture all remaining services and foundations to reduce the likelihood of ponding.**                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | **• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.**                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| **• Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances.**                                                                 | **• Bunding of chemical and fuel storage according to EA Pollution Prevention Guidance (PPG) Notes 2 and 6.**  
**• Appropriate protocols for chemicals and fuel handling in line with PPG6 and PPG11, with trained staff only to operate facilities.**  
**• Emergency spill response planning according to PPG21, including spill kits kept on site and trained staff available.**                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | **• 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.**                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
### Environmental Impact Management Plan

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**Environmental Impact**

<table>
<thead>
<tr>
<th>Landscape and Visual</th>
<th>Mitigation Measure</th>
<th>Action</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Light spill</td>
<td>• Any new lighting to be installed on site should be directional lighting.</td>
<td>• This mitigation will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
<td>• 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.</td>
</tr>
<tr>
<td>• Trees</td>
<td>• Careful siting and use of protective fencing where necessary compliant with BS 5837:2005, Trees in Relation to Construction.</td>
<td>• This mitigation will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
<td>• The impact associated with the construction of car parking or working areas has been assessed as ‘not significant’. However, this mitigation measure is proposed as a measure of best practice in order to protect existing trees. Any damaged trees to be re-planted at the end of Care and Maintenance Preparations.</td>
</tr>
</tbody>
</table>

**Noise and Vibration**

**Local residential properties, recreational areas & industrial receptors**

- General changes to noise directly from the site and associated changes in traffic.

<table>
<thead>
<tr>
<th>Action</th>
<th>Comments</th>
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<tbody>
<tr>
<td>• As appropriate:</td>
<td>• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
</tr>
<tr>
<td>• Use of equipment fitted with effective silencers where practicable;</td>
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<tr>
<td>• 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;</td>
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<tr>
<td>• Local residents informed of exceptional activities;</td>
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<tr>
<td>• No potentially significant external working outside of normal working hours without prior agreement with the local authority; and</td>
<td></td>
</tr>
<tr>
<td>• All construction activity to be undertaken in accordance with good practice as described by British Standard 5228:1997 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.</td>
<td></td>
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</tbody>
</table>
### Environmental Impact

<table>
<thead>
<tr>
<th>Socio-economic</th>
<th>Mitigation Measure</th>
<th>Action</th>
<th>Comments</th>
</tr>
</thead>
</table>
| Direct Employment | Long-term loss of jobs | • Magnox Limited will encourage its contractors to make use of local labour, equipment & services as far as practicable.  
• Magnox Limited will attempt to re-deploy affected staff & support staff in re-training/re-skilling for decommissioning roles. | • Contractors will be provided with a list of local companies known to be capable of involvement as sub-contractors in decommissioning works. |  |

### Surface Waters

<table>
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<tr>
<th>Where necessary:</th>
<th>Mitigation Measure</th>
<th>Action</th>
<th>Comments</th>
</tr>
</thead>
</table>
| The potential release of turbid and/or contaminated water from decommissioning activities on the site. | • Wetting down (e.g. excavation or construction/demolition areas) to prevent windblown spread of dust into locations where subsequent washing into surface water drains would be likely, and appropriate management of wastewater arising.  
• On-site roads to be regularly kept free from mud/dust deposits, including the use of re-circulating water wheel washers and road cleaners as appropriate.  
• Sheeting or seeding of any long term stockpiles of soil to reduce wash-off of suspended solids.  
• Careful design and siting of spoil mounds as necessary to manage run-off, including use of low walls around such mounds if appropriate.  
• See also measures under geology, hydrogeology and soils in relation to turbid and/or contaminated water entering the storm drainage system. | • 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. |
| Potential minor spills and leaks of non-radioactive substances. | • Careful siting of concrete plant and fuel/chemical handling facilities according to EA Pollution Prevention Guidance (PPG) Notes 5 and 6.  
• Bunding of chemical and fuel storage according to PPG2, PPG5 and PPG6.  
• Oil separation facilities on the surface water drainage system at appropriate locations.  
• Appropriate protocols for chemicals and fuel handling in line with EA PPG6 and PPG11, with trained staff only to operate facilities.  
• Emergency/spill response planning according to PPG2; including spill kits kept on site and trained staff available at all times. | • 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

<table>
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<tr>
<th>Environmental Impact</th>
<th>Mitigation Measure</th>
<th>Action</th>
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</tr>
</thead>
<tbody>
<tr>
<td>• Impacts on safety on roads (Fosse Lane, Hill Lane, The Naite.)</td>
<td>• No specific mitigation is possible because of the absence of specific accident clusters and causes and/or because the routes benefit from accident records at or below the national average. However, a Travel Plan will be implemented which will encourage communal transport or car sharing (see Appendix C).</td>
<td>• Development of a Transport Management Plan to encourage communal transport or car sharing.</td>
<td></td>
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</tbody>
</table>
| • Environmental Impacts e.g. proximity of vehicles to pedestrians, pedestrian amenity and mud on roads etc. | • No specific mitigation is possible because of the absence of specific accident clusters and causes. However, a Travel Plan will be implemented which will encourage communal transport or car sharing (see Appendix C).  
• Wheel washing of HGVs as necessary. | • 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 will be considered as part of the development of the Transport Management Plan | • Wheel washing addresses dust, ecology, geology etc. and surface waters impacts also. |

**Activities where mitigation may be required but specific measures cannot yet be selected (Condition 3b)**

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

### Geology, Hydrogeology and Soils

Several tasks carried out during Care and Maintenance Preparations may give rise to on-going impacts for the subsequent decommissioning phase. In respect of these on-going impacts then some or all of the impacts and mitigation measures (all of which would have been applied in the preceding phase) are as described above under Geology, Hydrogeology and Soils for the Care and Maintenance Preparations phase. The impacts and mitigation measures associated with any maintenance to be carried out during the Care and Maintenance phase would be encompassed by those discussed for Care and Maintenance Preparations.

There are no other significant adverse environmental impacts so far identified as arising from decommissioning activities during this phase.

### 5.4 Care and Maintenance

<table>
<thead>
<tr>
<th>Environmental Impact</th>
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</thead>
<tbody>
<tr>
<td>Geology, Hydrogeology and Soils</td>
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</table>
## 5.5 Final Site Clearance

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

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Mitigation Measure</th>
<th>Action</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Air Quality and Dust</strong></td>
<td>The following best practice measures will be implemented as appropriate:</td>
<td>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.</td>
<td>These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td>Dust Emissions (from on-site)</td>
<td>• Increase in site dust emissions due to construction, demolition and waste / materials handling operations etc., which could impact on residential and industrial receptors.</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• On-site roads to be regularly cleaned of mud/dust deposits, including the use of re-circulating water wheel washers and road cleaners as appropriate; and sheeting of vehicles carrying potentially dusty loads;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Minimisation of unnecessary material and waste handling as far as practicable;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Use of water sprays for external demolition activities as appropriate;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Use of water sprays during outside in-fill operations;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Avoidance of vehicular use of un-surfaced (soft) ground where possible and limits on vehicle speeds on such surfaces where it cannot be avoided;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Use of water sprays during particularly windy or dry conditions;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
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<td></td>
<td>• Use of water sprays to maintain damp surfaces during dry and windy weather (e.g. soil stockpiles, demolition rubble); or sheeting or seeding of surfaces of stockpiles of soil or other dusty materials;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Sheeting or seeding of surfaces and/or use of wind fences;</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td></td>
<td>• Covering of containers and/or use of wind fences.</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site. Sensitive habitats include the foreshore habitat.</td>
</tr>
<tr>
<td><strong>Dust Emissions (road side from vehicles)</strong></td>
<td>As appropriate:</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.</td>
</tr>
<tr>
<td></td>
<td>• Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dust loads.</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.</td>
</tr>
<tr>
<td></td>
<td>• Sheetings of lorries carrying dusty loads; and</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.</td>
</tr>
<tr>
<td></td>
<td>• Provision of wheel and body washing where appropriate for, as a minimum, heavy goods vehicle leaving the site.</td>
<td>• 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.</td>
<td>• These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.</td>
</tr>
</tbody>
</table>

### Archaeology and Cultural Heritage

...
## Environmental Impact Mitigation Measure Action Comments

### Ecology

Impacts and mitigation measures associated with this phase are expected to be very similar to those identified for the Care and Maintenance Preparations phase except for the removal of offshore structures including removal of the tidal reservoir wall. The mitigation measures proposed for the C&M Preps phase are therefore repeated here for completeness however, prior to any works commencing a number of ecological surveys will be undertaken to determine the presence or absence of protected species and habitats or species of conservation concern, both within and immediately adjacent to the site and up to an agreed distance from the site boundary. Proposed mitigation measures will be reviewed and revised as appropriate at the time in light of the results of the new surveys and nature conservation policies at that time.

### Badgers

- **Loss of foraging habitat and potential loss of setts**

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<tr>
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<tbody>
<tr>
<td>- No works within 30m of a badger sett without licence from Natural England;</td>
<td>- Provision of up to 5m width foraging zones alongside retained hedgerows and trees around any meadows to be developed for the benefit of foraging badgers.</td>
<td>- Environmental Manager to ensure that measures are put in place sufficiently in advance of the works and, if required, to ensure that a qualified and experienced ecologist is used in the process of obtaining a badger licence.</td>
<td>- These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
</tr>
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### Great Crested Newts/Reptiles

- **Incidental Mortality**

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<tr>
<th>Environmental Impact</th>
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</thead>
<tbody>
<tr>
<td>- Reptile proof fencing to be used to prevent reptiles from moving into working areas. Under licence from Natural England, fence off and clear amphibians from areas. Reptile proof fencing should be installed prior to works commencing, allowing a period of time for reptiles to move out of a work area identified as offering suitable foraging habitat.</td>
<td>- This mitigation measure will only be implemented when an area that has been identified as suitable foraging habitat for amphibians /reptiles is planned to be used. An experienced ecologist will be employed to oversee this work and to obtain a licence from Natural England.</td>
<td>- Environmental Engineer 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.</td>
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### Peregrine

- **Disturbance**

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<tr>
<th>Environmental Impact</th>
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</thead>
<tbody>
<tr>
<td>- Buildings to be checked for nesting peregrine prior to works being carried out to ensure compliance with the Wildlife and Countryside Act.</td>
<td>- Environmental Manager to ensure that periodic visual inspections are carried out for active nest sites using a suitably qualified ecologist.</td>
<td>- Although the impact has been assessed as ‘not significant’, peregrines receive some protection under the Wildlife and Countryside Act 1981, mitigation is therefore required.</td>
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</table>

### Sea Clover

- **Loss of habitat**

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<tr>
<th>Environmental Impact</th>
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<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Sea clover seeds to be collected in July from individual plants within development area and scattered n vegetation gaps within the foraging zones identified as mitigation for the loss of foraging habitat for badgers. Restoration of developed areas to take place at end of the decommissioning phase using a similar mix of species ideally including sea clover seed, cuttings or transplants.</td>
<td>- Environmental Manager 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.</td>
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</table>

### Note

- The mitigation measures proposed for the Care and Maintenance Preparations phase are repeated here for completeness. Prior to any works commencing, a number of ecological surveys will be undertaken to determine the presence or absence of protected species and habitats or species of conservation concern, both within and immediately adjacent to the site and up to an agreed distance from the site boundary. Proposed mitigation measures will be reviewed and revised as appropriate at the time in light of the results of the new surveys and nature conservation policies at that time.
<table>
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<tr>
<th><strong>Environmental Impact</strong></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Semi-Improved Grassland</td>
<td>• Loss of habitat</td>
<td>If used for decommissioning, meadows 1,2, and 3 (see Figure OLD/EC/03 of the Environmental Statement) to be re-sown with a species-mix matching the plant communities currently found and ideally containing sea clover seed or transplants.</td>
<td>• This measure will be implemented as part of the decommissioning project plan. Although the impact has been assessed as ‘not significant’ the meadows will be re-sown as good environmental practice and to encourage biodiversity.</td>
</tr>
<tr>
<td>Severn Estuary SPA/SAC/SSSI/Ramsar</td>
<td>• Dust deposition on coastal saltmarsh</td>
<td>Use of water sprays for external demolition activities as appropriate;</td>
<td>• This mitigation measure will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
</tr>
<tr>
<td>Geology, Hydrogeology and Soils</td>
<td>• 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.</td>
<td>Desk studies and site investigation, if necessary, to determine the presence or absence of contamination, so that appropriate working practices can be adopted from the outset;</td>
<td>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
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<td>• Controlled access to or from known or potentially contaminated working areas as appropriate;</td>
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<td></td>
<td>• Compliance with relevant PPGs (2, 6, 11 and 21) as appropriate;</td>
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<td>• Use of re-circulating wheel washers on HGVs leaving site as appropriate.</td>
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<td>• See also measures under ‘Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.’</td>
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<td>• See also dust control measures.</td>
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<td>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.</td>
<td>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
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<td>• Excavation dewatering, if necessary, with monitoring and appropriate management/disposal of any waters arising.</td>
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<td>• Tenting of exposed areas or excavations, if necessary.</td>
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<td>• Compliance with relevant PPGs including PPG11 and 21.</td>
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<td>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
<td>Although the impact has been assessed as ‘not significant’ these mitigation measures are proposed because they constitute good practice.</td>
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<td>Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground cover or the creation of temporary open excavations.</td>
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<td>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.</td>
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<td>Environmental Impact</td>
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| • Creation of new contaminant migration pathways (e.g. due to the creation of boreholes, piles or excavations and/or placement of permeable made ground connecting previously unconnected geological strata). | • Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS 10175 (Investigation of Potentially Contaminated Sites – Code of Practice).  
• Compliance with EA Technical Report PS-065/TR (Technical Aspects of Site Investigation).  
• Production of risk assessments, method statements and contingency plans.  
• Compliance with PPG guidelines.  
• Use of made ground that does not exceed average permeability of in-situ material to cause groundwater flow issues.  
• Placement of flow barriers and monitoring level and flow pattern impacts, as required. | • 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 temporary storage of contaminated soils, wastes or materials. | • Sampling and testing of soils, wastes and materials prior to storage as appropriate.  
• Segregation as appropriate.  
• Use of containment (e.g. membranes) to eliminate cross-contamination, as appropriate.  
• Management of rainwater run-off from storage areas for contaminated or potentially contaminated soil, wastes and materials. | • 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. | • Improved characterisation of groundwater levels and flow direction prior to the start of decommissioning.  
• Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate.  
• Authorised disposal of unsuitable soils, wastes and materials.  
• Puncture all remaining services and foundations to reduce the likelihood of ponding. | • 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. | These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.                                                                                                                                 |
| • Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances. | • Bunding of chemical and fuel storage according to PPG Notes 2 and 6.  
• Appropriate protocols for chemicals and fuel handling in line with PPG6 and PPG11, with trained staff only to operate facilities.  
• Emergency spill response planning according to PPG21, including spill kits kept on site and trained staff available. | • 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. |                                                                                                                                                                                                         |
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<th>Environmental Impact</th>
<th>Mitigation Measure</th>
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<tr>
<td><strong>Landscape and Visual</strong></td>
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<tr>
<td>• Light spill</td>
<td>• Any new lighting to be installed on site should be directional lighting.</td>
<td>• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
<td>• 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.</td>
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<tr>
<td>• Trees</td>
<td>• Careful siting and use of protective fencing where necessary compliant with BS 5837:2005, Trees in Relation to Construction.</td>
<td>• This mitigation will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
<td>• The impact associated with the construction of car parking or working areas has been assessed as ‘not significant’. However, this mitigation measure is proposed as a measure of best practice in order to protect existing trees. Any damaged trees to be re-planted at the end of Care and Maintenance Preparations.</td>
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<td>Environmental Impact</td>
<td>Mitigation Measure</td>
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<tr>
<td><strong>Noise and Vibration</strong></td>
<td>As appropriate:&lt;br&gt;• Use of equipment fitted with effective silencers where practicable.&lt;br&gt;• 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.&lt;br&gt;• Local residents informed of exceptional activities.&lt;br&gt;• No potentially significant external working outside of normal working hours without prior agreement with the local authority.&lt;br&gt;• All construction activity to be undertaken in accordance with good practice as described by British Standard 5228:1997 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.</td>
<td></td>
<td>• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
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**Socio-economic**<br>• No significant adverse environmental impacts identified arising from decommissioning activities during this phase.
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<tr>
<th>Environmental Impact</th>
<th>Mitigation Measure</th>
<th>Action</th>
<th>Comments</th>
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<tbody>
<tr>
<td><strong>Surface Waters</strong></td>
<td>The potential release of turbid and/or contaminated water from decommissioning activities on the site.</td>
<td>Where necessary:</td>
<td>These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.</td>
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<td>• Wetting down (e.g. excavation or construction/demolition areas) to prevent windblown spread of dust into locations where subsequent washing into surface water drains would be likely, and appropriate management of wastewater arising.</td>
<td>• Careful design and siting of spoil mounds as necessary to manage run-off, including use of low walls around such mounds if appropriate.</td>
<td>Wheel washing addresses dust, ecology, geology etc. and highways impacts also.</td>
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<td>• On-site roads to be regularly kept free from mud/dust deposits, including the use of re-circulating water wheel washers and road cleaners as appropriate.</td>
<td>• See also measures under geology, hydrogeology and soils in relation to turbid and/or contaminated water entering the storm drainage system.</td>
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<td>• Sheet ing or seeding of any long term stockpiles of soil to reduce wash-off of suspended solids.</td>
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<td>• Careful design and siting of spoil mounds as necessary to manage run-off, including use of low walls around such mounds if appropriate.</td>
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<td>• See also measures under geology, hydrogeology and soils in relation to turbid and/or contaminated water entering the storm drainage system.</td>
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<td>• Careful siting of concrete plant and fuel/chemical handling facilities according to EA Pollution Prevention Guidance (PPG) Notes 5 and 6.</td>
<td>• 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.</td>
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<td>• Bunding of chemical and fuel storage according to PPG2, PPG5 and PPG6.</td>
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<td>• Oil separation facilities on the surface water drainage system at appropriate locations.</td>
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<td>• Appropriate protocols for chemicals and fuel handling in line with EA PPG6 and PPG11, with trained staff only to operate facilities.</td>
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<td>• Emergency/spill response planning according to PPG21; including spill kits kept on site and trained staff available at all times.</td>
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<td><strong>Traffic and Transport</strong></td>
<td>Impacts on safety on roads (Fosse Lane, Hill Lane, The Naite).</td>
<td>No specific mitigation is possible because of the absence of specific accident clusters and causes and/or because the routes benefit from accident records at or below the national average. However, a Travel Plan will be implemented which will encourage communal transport or car sharing (see Appendix C).</td>
<td>These mitigation measures will be re-considered on the basis of repeat traffic surveys prior to final site clearance.</td>
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<td>• Development of a Transport Management Plan to encourage communal transport or car sharing.</td>
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### Environmental Impact

- Environmental Impacts e.g. proximity of vehicles to pedestrians, pedestrian amenity and mud on roads etc.

### Mitigation Measure

- No specific mitigation is possible because of the absence of specific accident clusters and causes. However, a Travel Plan will be implemented which will encourage communal transport or car sharing.
- Wheel washing of HGVs as necessary.

### Action

- 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 will be considered as part of the development of the Transport Management Plan.

### Comments

- These mitigation measures will be re-considered on the basis of repeat traffic surveys prior to final site clearance.
- Wheel washing addresses dust, ecology, geology etc. and surface waters impacts also.

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### Activities where mitigation may be required but specific measures cannot yet be selected (Condition 3b)

<table>
<thead>
<tr>
<th>Environmental Impact</th>
<th>Mitigation Measures Under Consideration</th>
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<tr>
<td>No such activities have been identified.</td>
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### 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. In particular, repeat ecology and traffic surveys, the former including bat, protected species and breeding bird surveys, prior to final site clearance are proposed followed by a reconsideration of the appropriate mitigation measures.
6. Site Management and Decommissioning

6.1 General Site Management

*Hours of Work*

Current normal working hours are between 07:25 and 17:00 hours, Monday to Thursday. Most decommissioning work on site will also be undertaken during these hours under a single shift working arrangement, but this may alter for certain activities. For example, from time to time the working day may be extended and/or some weekend (Fri-Sun) or night-time working may be required in order to complete specific items of work such as concrete pouring. Seven days a week, 24 hours a day shift working may be necessary for retrieval of operational ILW and for subsequent waste packaging operations. South Gloucestershire Council will be notified in advance of any potentially significant work outside of regular Monday to Friday working hours and will be provided with a site contact in the event of any queries or complaints.

*Lighting*

The existing night-time illumination of the site consists mainly of internal lights within the transparently clad parts of the reactor building together with low level ‘street’ lights.

During Care and Maintenance Preparations and Final Site Clearance, further lighting may be necessary at times. Use of such lighting, which would only normally be used at the start and end of the working day during the winter months, will be at the discretion of the relevant Site Supervisor. Should significant additional lighting be required close to the river bank, advice will be sought from Natural England.

During Care and Maintenance it is expected that there will be occasional low level ‘street’ lighting on service roads, provided for staff attending site during the hours of darkness, and lighting activated by site security systems.

*Transport*

Vehicle movements to and from Oldbury will be subject to the provisions of a Transport Management Plan (see Appendix C).
6.2 Decommissioning Methods

Conventional Area Decommissioning

Conventional plant and buildings will be de-planted and demolished using standard construction industry methods. The exact methods to be employed will be detailed in method statements for individual projects.

The interior of buildings will be first de-planted and decontaminated as necessary prior to demolition of the buildings themselves. To facilitate this, large or heavy plant/equipment may be cut or split into components or sub-component parts prior to their removal. It is expected that after de-planting etc. is complete, demolition will be carried out using conventional methods. All buildings will be demolished in their entirety, the structures including any cabling removed to ground level and the voids backfilled where appropriate.

All suitable demolition material from conventional buildings will be retained on-site to be used for the in-fill of below ground voids.

The only existing road/hard standing to be retained into Care and Maintenance will be the road that enters the main gate, turns right and passes round the reactor building and radioactive waste storage building before returning to the main gate via the same approach. Otherwise, most existing hard standings, paths and roads will be punctured to assist the growth of vegetation. A car park will be retained into the Care and Maintenance period.

Demolition of Radioactive Facilities

Radioactive plant in the reactor building will be decontaminated, where practicable, and dismantled. Plant and equipment will be decontaminated in situ and recycled, also where practicable to do so. Examples of these decontamination processes are shown in Box 5. Contamination control provisions will be applied (e.g. work will be done within temporary enclosures) and working procedures will take account of the requirement to minimise workers exposure to radiation to As Low As Reasonably Practicable (ALARP).

Following decontamination and de-planting, buildings scheduled for demolition during Care and Maintenance Preparations will be demolished, using conventional techniques. Monitoring checks will be made on the building as demolition proceeds and on the resulting demolished materials prior to disposal.
Box 5: Examples of Decontamination Techniques

- Chemical decontamination involves the use of chemicals to remove the surface contamination.
- Scabbling involves the physical removal of surface contamination, predominantly on concrete.
- Shot blasting uses high velocity shot to remove surface contamination.
- Water jetting involves the use of a pressurised water jet to remove surface contamination.
- Wipe down where decontamination is removed by ‘wiping’; specialist equipment and materials are usually required.

6.3 Waste Management

Intermediate Level Radioactive Waste (ILW)

The waste management strategy for all ILW streams is detailed in the site’s LC35 decommissioning programme and Oldbury Site, Radioactive Waste Management Case Issue 6 (April 2017). The majority of the ILW will be retrieved from its current location during C&M Preps and packaged into Ductile Cast Iron Containers (DCICs). Methods to be used will be waste stream specific, with some ILW requiring pre-treatment (either by size reduction or drying). There may also be a requirement for conditioning, to create a waste package suitable for interim storage and final disposal. Packaging proposals for each waste type are set out in Letter of Compliance (LoC) submissions which endorse the disposability of that specific design of waste package. ILW packages may be stored on site in an intervening stage, prior to inter-site transfer to the Berkeley Interim Storage Facility (ISF) where they will be kept, pending transfer to the national Geological Disposal Facility (GDF) when available. The first Waste Type to be retrieved in May 2018 will be IonSiv Cartridges and High Dose Rate Filters which are to be packaged in MOSAIK DCICs. During this period Miscellaneous Contaminated Items (MCI) are also to be retrieved from the sites Waste Cells and undergo Sorting, Segregating and Characterisation activities. The outcome of the MCI campaign will indicate the number of DCICs required to package the MCI and for storage in an ISF. ILW Pond Skips are to be retrieved and cut up in air into appropriate sections and packaged by the Ponds Team in 2018. When a package is available it is to be taken for buffer storage until appropriate transport, encapsulation and storage arrangements are in place at Hinkley Point A, the site undertaking its onward management.

Low Level Radioactive Waste (LLW)

Operational LLW routinely arises at nuclear power stations. Because of this, LLW management facilities already exist on site, located within the RCA, to process and package LLW before it’s dispatched for onward treatment or disposal through a contract with the Low Level Waste Repository (LLWR). Other than routine LLW, 109 LLW Pond Skips and 78 LLW IonSiv Filters were retrieved from the Ponds in 2017. They are currently in storage awaiting onward disposal arrangements to be put in place.
The site has now entered its decommissioning phase, and wastes arising from these activities are processed on site prior to consignment off-site, utilising the LLWR contract with the aim to divert LLW from the LLWR facility near Drigg in line with the National Waste Programme.

Liquid radioactive effluent requiring disposal is transferred to the Active Effluent Treatment Plant (AETP) for processing and disposal to the river.

Photographs 3 & 4: LLW Pond Skips & IonSiv Filters in Buffer Storage

Non-radioactive Hazardous Wastes

All hazardous wastes will be managed by contractors who hold the appropriate Carrier’s Licence and taken to a permitted facility, both of which are checked for current validity before a contract is placed and implemented. The specific contractor used will depend on the type of waste requiring disposal. Hazardous Waste consignments will be accompanied by a hazardous waste consignment note. All records are auditable and will be checked regularly.

Photograph 5 – Hazardous Waste disposal

Asbestos

Insulation containing asbestos will be removed under stringent safety conditions using specialist personnel working in tented areas subject to airlocks and a negative air pressure system. All work will be carried out in strict accordance with the Control of Asbestos at Work Regulations 2012. The tents will fully enclose and seal the work areas and the entire volume will be smoke tested to ensure its integrity before asbestos removal commences. Prior to removal, all asbestos lagging will be injected with a water solution to reduce the number of fibres released into the tented
enclosure. Respirators and clothing change facilities will be required for all personnel working in the controlled areas.

Non-radioactive asbestos disposal will be to authorised off-site licensed asbestos disposal sites. Contractors’ licenses will be checked before the contract is placed. Once the contract is implemented, it is the contractor’s responsibility for meeting the nationally set controls for disposal of the waste through approved landfill sites, and the requirements of the Carrier’s Licence.

**Other Wastes**

Non-radioactive waste materials have arisen throughout the operating life of Oldbury. The management of waste at Oldbury aims to minimise the need to use landfill by reducing waste volumes wherever possible by following the waste hierarchy of waste management. Oldbury follows the Environmental Protection Act 1990 Duty of Care principles for all waste arisings and where waste is transferred, it is accompanied by a transfer note and a full written description of the wastes.

Non-radioactive effluent will be disposed of to the River Severn in accordance with Oldbury’s discharge permit under the Environmental Permitting (England and Wales) Regulations 2016. Discharges under this permit include rain water and fully treated effluent from the site sewage treatment plant.

During operation the site required water to be abstracted from the River Severn for cooling purposes. The abstraction of river water was undertaken in accordance with an environmental permit. The site was also permitted to abstract groundwater from an onsite borehole, although this abstraction route was never put into service. Both these abstraction permissions were surrendered in 2017 and a Revocation Issue Letter was sent by The Environment Agency on 9th November 2017. Oldbury Site now owns no permissions to abstract water from any watercourse or ground.

**6.4 Radioactive Discharges and Emissions during Care and Maintenance Preparations**

Radioactive discharges to air and water from Oldbury during decommissioning will continue to be made in accordance with authorisations granted by the Environment Agency (EA) under the provisions of The Environmental Permitting (England and Wales) Regulations 2016. It is expected that annual gaseous and liquid discharges will reduce, although there may be some temporary peaks resulting from certain hazard reduction activities.
7. Changes to the Environmental Management Plan

In September 2014, the change in the Parent Body Organisation (PBO) for Magnox provided an opportunity to review the current decommissioning strategy in a number of key areas and a new plan was developed known as ‘Lifetime Plan 2015 (LTP15)’.

LTP15 introduced changes associated with decommissioning strategy, waste strategy and project timescales. These changes impact Oldbury Licence Condition 35 (Decommissioning) and the process is underway to attain the relevant permission from the Office for Nuclear Regulation to enact the changes, the first of these changes, required for asbestos, was completed in December 2017. An assessment of the asbestos milestone LC35/0.02 was completed (WD/WAN0137/17) following company procedures and using the change justification form. This LC35 milestone change has now been agreed with the ONR.

Further areas of decommissioning strategy impacted by LTP15 at Oldbury include reactor safe-store preparations along with leaving some redundant contaminated facilities and voids in-situ during Care and Maintenance (C&M). It is also proposed that Fuel Element Debris (FED) is to be transported to the Low Level Waste Repository (LLWR), and all ILW in DCIC’s will transported to Magnox Berkeley ISF for storage awaiting final disposal at the GDF.

Additional assessments are required to determine the full environmental impact of any changes proposed by LTP15, these assessments will help identify where EIADR ‘99 Regulation assessments are required. However an initial screening of the Environmental Statement was undertaken in 2017 to identify any imminent changes and to ensure they have been duly assessed.

This review identified four changes to the environmental baseline that required assessing within the reporting period. The Magnox process for assessing compliance with EIADR99 was followed. All changes were judged to pose no significant adverse environmental impacts in the absence of mitigation and ‘Finding of No Significant Effects’ (FONSEs) were recorded. Two of the changes related to work that is no longer required, one assessed the impacts from constructing a drying facility for ILW and is discussed further in section 8 and the fourth related to changes in the proposed lay-out of on-site roads and hard standing areas as well as some changes to planned construction work. This work is also discussed further in section 8. All remaining actions agreed within the Environmental Statement remain valid.
8. Decommissioning Activities

A number of decommissioning projects have been undertaken at Oldbury Site in 2017/18. This section summarises these projects under the headings; Oldbury Cooling Pond, Asset Management, Site Restoration, Plant and Structures, ILW strategy and Site Restoration.

8.1. Oldbury Cooling Pond

Pond water and the radiological burden within the Oldbury Cooling Pond constitute the most significant environmental hazards remaining at the site. These hazards relate to both planned and unplanned releases to the environment. An example of an unplanned release would include defects allowing seepage through the pond structure and acting as a direct pathway to the environment as discussed in section 8.4 of this EMP. The disposal of waste following the treatment of pond water is an example of a planned release; the cooling pond is the main contributor to waste water processed at the Active Effluent Treatment Plant (AETP) this plant ultimately discharges radioactive liquid effluent, albeit under consent, to the environment. These environmental impacts will be eliminated by the decommissioning of the cooling ponds.

The Oldbury Cooling Pond Decommissioning Project commenced in April 2016. The initial phase of work comprised the radiological characterisation of waste streams to allow for compliant storage and disposal. The project has since moved into bulk waste retrievals and planning/installation works for the removal of IonSiv cartridges and ILW skips.

Pond Skips:

Removal of LLW skips continued during the first half of 2017, with 109 of 136 skips removed from the pond as suitable for disposal to the LLWR facility near Drigg. These have been handed over to Waste Operations and are in buffer storage pending onward management.

Currently the 27 skips remaining in the pond are pending management as ILW. The strategy for their management has recently changed, underpinned by optioneering, from underwater size reduction with divers to in air size reduction using a proprietary cold cutting technique. In support of the optioneering, a number of trials were conducted to assess the feasibility of this alternative technique, which concluded it was viable. The whole retrieval process is now in the design/implementation phase, with a view to commencing removal of ILW skips in the second quarter of 2018.
Photograph 6 – Removal of LLW skip from the Pond in C3 conditions.

Photograph 7: Pond skip being placed into containment bag.

Photograph 8: Inactive trial work.
**Freestanding furniture retrieval:**

All freestanding furniture, such as underwater fuel handling equipment, has been removed from the pond water, size reduced and handed over to Waste Operations for subsequent disposal as LLW. Remaining in the pond now are fixed furniture items, such as pond water recirculation pumps and equipment that is being installed to facilitate IonSiv retrievals. Once IonSiv retrievals are complete later in 2018, this equipment will also be removed from the pond.

*Photograph 9: Desplitter machine removal*

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**IONSIV filter retrievals:**

After initial underwater characterisation was conducted in 2016, IonSiv filters suitable for disposal to LLWR were retrieved from the pond and handed over to Waste Operations. 78 of 80 filters were retrieved from the pond and handed over, with the two remaining filters to be packaged with IonSiv cartridges in MOSAIKs.

*Photograph 10: Flat top size reduction*
Photograph 11: IonSiv filter removal.

Photograph 12: Section of the Pond floor surface after sludge removal.

Sludge Removal:
Initial work was conducted by the pond project to assess the pond sludge processing route via the Pond Filtration Plant (PFP) for likely waste throughput / secondary waste generation. This showed that throughput and arisings were in line with expectation and that the plant would not be challenged by the desludging work required of it. Desludging is now a routine task with a significant amount of the greatest sludge burden having been removed, this represents a simplification of the waste process as no unique waste stream is produced.

IonSiv retrieval equipment installation:
As part of the Magnox waste strategy, IonSiv cartridges from Sizewell and Dungeness Magnox sites were consolidated at Oldbury, so that only one set of retrieval equipment required installation. During 2017, the retrieval equipment was designed, fabricated and tested off site ready for delivery to site and recent installation. This equipment allows for IonSiv cartridges to be retrieved
from the water in a similar manner to flask operations, thereby providing significant protection to the operators.

Photographs 13 –15: Installation of MOSAIK handling equipment in flask corridor.

Initial pond drain:
In order to isolate the pond water from the launders system, and to improve the operational tolerances on pond water level, an initial drop of pond water commenced at the end of 2017, removing 500mm of water from the pond. This will support future draining of the pond by gaining useful operational plant data and also gained an early indication of the radiological hazard associated with the drained pond structure. Bulk pond drain past this level will recommence later in 2018.

Pond characterisation:
Underwater survey data of the pond walls and floors have been gained, which show the radiological hazard of the pond structure to be low such that simple washing of the walls to remove residual loose contamination (which has also been shown to be low), is all that is required. Options for stabilisation and fixing the pond walls for entry into C&M are currently being investigated by the Pond Programme for the remaining ponds in the Magnox fleet.
8.2. Asset Management

**Weatherproofing Boiler Silencer Huts:**

During operation excess pressure within the steam circuits of the boiler could be discharged to atmosphere via the boiler silencer huts located on the Reactor building’s roof. Pipework penetrates the roof through 8 silencer huts. The huts had no weatherproofing allowing water to enter. The ingress water was tracking along the pipework and accumulating on the 6th floor stressing galleries. This then overflowed to all other levels within the reactor buildings.

Water ingress was accelerating degradation of various items of plant including:

- **Civil structures** – over the past year concrete spalling events associated with water ingress have accelerated within the reactor buildings. Events are concentrated within the circulator halls and the reactor basements.
- **Asbestos lagging** – The pipework along which the water tracks down from the silencer and any overflow from the 6th floor tracks down various pipework which have sections of asbestos lagging which will degrade with dampness.
- **Live services** – Although water ingress has not caused any issues with the electrical system, ongoing water ingress has the potential to lead to unsafe conditions.

In order to stop the water ingress a project was undertaken to over-clad the boiler silencer huts. To do this it was necessary to remove the installed edge protection and replace it with a temporary working platform.

*Photographs 16 & 17: Installing working platform*

**Townswater Whole Site Protection**

As Oldbury is embarking on some modifications to the Townswater system, an inspection by Bristol Water was conducted to ensure compliance with Water Supply Regulations, 1999 No.1148. Oldbury site has been assessed as a “Fluid Category 3” by Bristol Water under the Water Supply Regulations, 1999 No.1148 meaning under the assessment there is a potential for backflow of water from the site to the Bristol Water main.

To mitigate an excavation was required to install a double verifiable check valve for fluid category 3 protection using Water Regulation Advisory Scheme approved fittings.
For environmental reasons improvements were needed to the town’s main water reception tanks. The tanks were oversized for site usage once boiler water was no longer required for reactor cooling. This meant that water retention time within the tanks was long enough for legionella proliferation to be a threat in warm weather resulting in the dumping of large volumes of water. Although the reservoirs are retained for Hydrant and process use the main site is now supplied directly from the main removing the risks posed by legionella and the requirement to ‘dump’. This improvement required an excavation to install a double check valve for fluid category 2 protection using Water Regulation Advisory Scheme approved fittings.

*Photograph 18: Carrying out the excavation*

*Photograph 19: Checking valve arrangement*

**HVAC De-gas**

The decommissioning strategy for out of service air-conditioning units and chiller units is for them to remain in situ until the demolition of the associated buildings. This will be a number of years. However in order to reduce the risk of the release of greenhouse gases to the environment and to comply with the requirements of the Fluorinated Greenhouse Gases Regulations 2015 a qualified technician was used to compliantly de-gas over 60 air-con & chiller units across the site.
8.3. Intermediate Level Waste Strategy

Various types of Intermediate level waste (ILW) has arisen during the generation and defueling phases of Oldbury Site. The strategies for managing these waste streams will either be carried out on site or waste will be transferred to a nominated site for management. The current strategy for the management of ILW at Oldbury is given in section 6.3. The strategy is supported by generic studies and site specific validation, however future reviews may be undertaken following learning from other sites.

**Ambient Temperature Conditioning System (ATCS)**

To enable the conditioning of the sites IonSiv filters and cartridges in MOSAIK DCICs, an Ambient Temperature Conditioning System facility has been designed, comprising of electrical systems, ventilation systems and ATCS units. Trials and testing of the units at works have been completed and conversion of an existing site building to house the facility has commenced. Construction, commissioning of the plant and processing of all IonSiv cartridges and filters will be completed in 2018. On completion of this work, the ATCS units will be shipped to other Magnox Sites to enable the conditioning of their wastes.

**Schematic 1: ATCS Building layout**

![Schematic 1: ATCS Building layout](image)

**MOSAIK Temporary Store**

To enable the storage of MOSAIK DCICs containing ILW IonSiv filters and cartridges, a new storage facility has been developed to fit within an existing site building. The temporary store will be used to store the MOSAIK DCICs containing IonSiv cartridges until such time as they can be transported to the ISF at Berkeley Site. Work has commenced on the conversion and the facility will be available in 2018 for use.
To enable the conditioning of sludge, sand, resin, Miscellaneous Active Components (MAC) and Miscellaneous Contaminate Items (MCI), work has been carried out to identify a location for the AVDS plant. This plant has been successfully used at 3 other sites (Berkeley, Bradwell & Dungeness) for conditioning these waste streams. A planning application has been submitted and approved for the construction of a new facility on the old package boiler hardstanding area at the north side of the RCA. Initial preparation works have been undertaken including demolition of CO₂ plant room (building 33) to clear the area for the buildings construction which will take place in 2018.

The need to construct an AVDS building had not been identified when the EIADR99 consent to decommission the site was granted hence the construction of the building was not detailed in the original Environmental Statement. A Change Assessment was therefore completed in accordance with the EIADR Regulations and Magnox procedures. The assessment concluded that the change did not result in a significant adverse environmental impact in the absence of additional mitigations. This was recorded as a ‘Finding of No Significant Effect’ (FONSE).

The application of the Site’s Environmental Risk Assessment Process ensured the mitigation measures identified in the EIADR Environmental Statement were applied to the demolition work. The same process will be followed for the construction work.

Note: The new facility also provides sufficient space for a Waste Transfer Area to be installed at a later date, which is currently proposed to be used to transfer of MCI into MOSAIKs and Type VI DCICs.

**MCI Sort, Segregation & Characterisation**

In preparation for the packaging of the MCI stored on Site, there is a requirement to sort, segregate and characterise all the ILW MCI on Site. Work has been carried out to design the facilities required to carry out this work on top of the Magnox waste vaults using temporary structures and other equipment to carry out this work. It is expected that this work will lead to a reduction in the amount of ILW MCI stored on site (as some of the waste will have decayed to LLW). Construction of these facilities has commenced and is expected to be completed in 2018, along with all the sorting, segregation and characterisation work, after which the waste will be returned to appropriate storage facilities.
Cross Site Transport

To transport MOSAIK DCICs a VERSALIFT fork lift truck has been sourced and road protection will be installed (in 2018) to enable the transport of the MOSAIKs around the site.

Photograph 23: VERSALIFT fork lift truck transporting a MOSAIK DCIC

ILW Skip Store

To support the drain down of ponds, there is a requirement to store ILW skips on site until such time as they can be transported to Hinkley Point A for packaging into encapsulated concrete boxes. To this end, an existing Site facility has been assessed and modified to enable the storage of these items. The store is to be put into service in 2018.

Temporary C3 Facility

To enable the processing of large items of radioactive waste, design work has been carried out to enable the creation of a temporary C3 cutting facility within the Waste Reduction Facility (WRF). The facility will be constructed and made operational in 2018.

Sand, Sludge and Resin

Concept design work for the vacuum fill house was completed and a preferred location for this plant chosen. Investigations were also carried out to confirm the scope (number of tanks/vessels) that will be subject to waste retrievals.
8.4. Site Restoration and Land Quality Investigations

In 2010-11 elevated concentrations of radiological contaminants (principally tritium) were identified in groundwater from a small number of boreholes within the Radiation Controlled Area (RCA) adjacent to the main reactor block and ponds building. A programme of regular and targeted sampling was initiated and investigations undertaken to identify a potential source.

There was found to be seepage from the Joint Monitoring System (JMS) underneath the pond, referred to as APC-24. Intervention measures were put in place by the site to prevent any further seepage.

A Conceptual Site Model (CSM) was developed for APC-24 and a data gap analysis completed, the recommendations stated that an intrusive site investigation should be undertaken which commenced in February 2017.

The investigation included the installation of twelve new boreholes ranging from 11 to 21m below ground level. The complete scope of the investigation was described in the 2017 Environmental Management Plan. Subsequent hydrogeological tests and the sampling and analysis of soil and groundwater were conducted. The aim of the investigation was to address data gaps in the existing conceptual site model (CSM). Particular gaps or uncertainties were:

- the direction of vertical groundwater flow between the shallow water bearing strata (Aquifer A) and the deeper water bearing strata (Aquifers B and C) within the Mercia Mudstone;
- the extent to which tritium may have migrated from Aquifer A vertically through narrow low permeability horizons which separated the three aquifers;
- the extent to which the grout curtain prevented tritium migrating from its source inside the radiation controlled area (RCA) to outside the RCA. The grout curtain was installed to prevent water ingress into the RCA during the original site construction.

Groundwater samples were obtained in June and September 2017 from both the new and existing boreholes. The tritium activity concentrations recorded in all boreholes were relatively low. The maximum concentration recorded inside the RCA was 460 Bq/L and 44 Bq/L outside the RCA. This compares to a World Health Organisation value of 10,000 Bq/L for the protection of drinking water.

Notwithstanding the above, very low concentrations of tritium were recorded in boreholes located outside of the RCA. This confirmed that whilst the grout curtain (an underground grout barrier installed to act as a dam for the reactor foundation during construction) possibly restricted contaminant migration it did not entirely contain it within the RCA.

A significant reduction in tritium concentration was recorded with depth. Lower concentrations of tritium were recorded in the deeper Aquifer B than in the shallower Aquifer A and tritium was not recorded in the deepest Aquifer C. This indicates that a contaminant migration pathway exists through the intervening horizon between Aquifer A and Aquifer B but not between Aquifer B and Aquifer C.

Pressure transducers which took ‘continuous’ groundwater level readings from each of the three aquifers confirmed the tidal effect on the vertical hydraulic gradient. The vertical groundwater flow direction between the aquifers varied depending on the tidal conditions. For example, over most of the tidal cycle there is an upward hydraulic gradient from Aquifer B to Aquifer A. However, on the receding tide there is a small vertical hydraulic gradient from Aquifer A to Aquifer B, allowing downward contaminant migration to occur.
Pumping from the JMS via four manholes commenced in 2015 and still continues. The site investigation and subsequent interpretation of data successfully addressed the identified data gaps in the CSM.

- No ongoing input of contamination from the JMS due to pumping arrangements
- Ongoing reducing concentrations of contamination in Aquifer A
- Evidence of only limited downward migration of contamination within the RCA
- No significant migration of tritium outside the RCA

Monitoring of the boreholes installed in 2017 has been added to the site’s ongoing groundwater monitoring routine.

In 2016, a further possible loss from the Fuel Cooling Pond was identified. The Fuel Cooling Pond failed a routine leak test and subsequent investigations identified a potential integrity issue with the Pond Launder System (PLS). This system is designed to prevent excessively high water levels in the cooling pond and includes a wet sump and connecting pipework. The PLS has subsequently been permanently taken out of service and the pond is now operated with a lowered water level. Based on the above, the PLS was identified as an APC, and assigned the reference APC26.

A CSM was produced to establish how the potential leak of pond water may have occurred and how any contamination may spread away from the potential source in the subsurface environment. The PLS leak is thought to be through either:

- a leak from the PLS where it passes through the southern wall of the Wet Sump. The leak would have reached the Mercia Mudstone by following the construction joint between the Wet Sump and the Cooling Ponds; or
- a leak from the PLS which entered the Pond Walkway Gutter. A second failure allowed the leak to reach the Mercia Mudstone by following the construction joint between the Cooling Ponds Pump House/Wet Sump and the Cooling Ponds.

In either case, the leaking pond water is thought to possibly have entered the Mercia Mudstone at the base of the Pond Water Pump House foundations, noting that no increase in contamination has been identified in groundwater that could be attributable to APC-26. It is considered unlikely that the contamination could have migrated into the Made Ground because groundwater elevations measured in the Made Ground typically exceed the elevation of the top of the construction joint, and groundwater seepage has not been observed at this location.

There is currently no evidence of APC26 impacting groundwater quality. This is likely to be due to either:

- The groundwater quality impact of APC 26 is obscured by that of APC24. The most likely leak point for APC26 is located within 15 m of the APC24 JMS. The source term for both APCs is pond water.
- Pumping from the JMS which was introduced to mitigate the impact of APC24 is slowing the migration of contamination away from APC26 or has captured it.

As APC26 is located within close proximity of APC24 and has a comparable radiological source term, the groundwater monitoring wells and monitoring regime put in place to monitor APC24 are adequate to monitor APC26.

The results of ongoing groundwater monitoring will be reviewed regularly to determine whether there has been a change in groundwater quality in the Mercia Mudstone which could be attributed to the combined impact from APC24 and APC26.
8.5. Plant & Structures Programme

**Infrastructure Enablers Project**

The project has a diverse range of work-packages which includes the reconfiguration and modification of Electrical, Mechanical and C&I systems in a way that enables the managed retreat and demolition of buildings within the North and South sides of the site whilst retaining the required functionality of the system where required.

It also includes the Site Accommodation Strategy, involving the modification of existing buildings to accommodating the site core team and provision of adequate facilities for the C&M preparations phase. The work progressed in this reporting period is detailed below:

**Electrical Overlay System (EOS)**

The installation of an EOS for site is an enabler for many decommissioning works. By providing a smaller, simpler power supply to site, all oil filled transformers can be removed from site, buildings such as the turbine hall that once routed the site power can be demolished and the old electrical system can be easily decommissioned. Oil filled transformers have proven to be problematic at Oldbury; a failure of a radiator in 2013 resulted in a non-consented release of oil to the environment culminating in a Warning Letter from the Environment Agency. In addition, a number of transformers are known to seep small quantities of oil into their associated containment. The removal of these hazards is considered a significant environmental improvement.

Physical works on the EOS project started in 2015. During this reporting period the construction of the East Package Substation and 11kV Distribution Building was completed, and the switchgear installed in both buildings.

Following successful commissioning of the switchgear the final connections have been made and due to become live by May 2018. Work will then commence to drain and remove all remaining oil from the oil filled transformers on site.

The requirement for an EOS was not previously envisaged and therefore was not included in the Environmental Statement (see the Change Assessment section below).

*Photograph 24 – Site Services Building and the 415 East Package Sub-Station*

**Relocating Site Services**

A new building has been installed to house all the information services equipment required for the site to enter into Care & Maintenance. The relocation of this equipment allows the site to back-out
of buildings earmarked for demolition. This represents a change to what was agreed in the Environmental Statement which had not envisaged the requirement. However, the building did gain planning approval from South Gloucestershire council and was constructed to current building standards. The building will contain sites IT infrastructure, alarm systems and fire systems in an effort to centralise for easy operability during the decommissioning phase.

**Site Accommodation**

Conversion of the existing site electrical & instrument workshop into a new construction office has been completed. The conversion has provided accommodation for more than 70 personnel comprising of 15 rooms plus atrium, male and female toilets, common kitchen area, and meeting rooms.

The next phase of this project is to completely relocate all personnel and functional buildings to a new designated area away from the south site demolition area. It is planned to install a number of temporary accommodation buildings on a new hardstanding to allow the site to function up until care and maintenance. This represents a change to what was agreed in the Environmental Statement which stipulates the construction of a new administration building. An environmental risk assessment will be produced for the work to ensure the mitigation measured identified in the EIADR Environmental Statement are applied.

**EIADR99 Change Assessments**

The requirement for the Site Services and the EOS buildings were not previously envisaged and as such were not specifically addressed in the EIADR Environmental Statement. The change was assessed using the Magnox process for assessing compliance with EIADR99 along with other changes affecting roads, hard standings and new buildings.

Overall the change assessment covered:
- The construction of the new EOS and site services buildings,
- Not replacing the gatehouse, with the intention now to use the existing gatehouse,
- Not constructing a new administration building, with plans underway to construct a concrete slab to house modular buildings as discussed above,
- roads and hardstandings are now to remain until FSC when they will be demolished as part of site restoration.

The Change Assessment concluded that the potential impacts arising from the changes would not give rise to any significant adverse environmental impact. For example, the impacts from construction of the Site services building and the buildings to support the EOS project are less significant that the impacts from construction of an administration building and gatehouse. The mitigation measures given in the Environmental Statement are therefore appropriate to manage any potential environmental impacts associated with the works and as such a ‘finding of no significant effect’ was recorded.

**Water Systems**

The water system on site has been reconfigured to allow the Turbine Hall to be bypassed and the RCA directly supplied from the Townsmain. This has improved overall system performance and reduced the likelihood of legionella proliferations. The threat of legionella growth has previously led to the flushing and dumping of water at the site, this work represented a significant environmental improvement. The project involved ground works and pipe cutting to install new plastic pipelines. This was all carried out by a competent contractor in accordance with the Water Regulations Act 1999 under the guise of Bristol Water Regulations Office.
The townswater reservoirs are now for process water only, further reducing the likelihood of bacterial growth such as Legionella infecting drinking/domestic water systems.

*Photograph 25 – Excavations to install new water pipes*

**Compressed Air System**

The use of Station and Instrument Air significantly reduced once the site was declared fuel free. This reduction will continue as the Ponds operations decrease. The site recognised that rationalising the systems would offer savings both in energy usage and statutory maintenance. To date the work has included:

- Installation of new suitably sized energy efficient Variable Speed Compressors and supporting filtration equipment.
- Cutting of air pipes in strategic locations to separate the turbine hall from the Reactor Building Complex; thus reducing losses by increasing the performance of the system.
- Making the system in the turbine hall completely non-operational.

*Photograph 26 – Excavations to install new water pipes*
8.6. Activities planned in 2018/19

- Completion of installation and commissioning work for the ATCS, MOSAIK temporary Store and road plating to enable conditioning and storage of MOSAIKs containing ILW IonSiv filters and cartridges.
- Design and build of temporary building to house AVDS for drying DCICs and installation of an AVDS (Advanced Vacuum Drying System) Facility.
- Characterisation and sorting of Miscellaneous Contaminated Items (MCI) and on completion removal of temporary facilities.
- Sampling and characterisation of sludge, sand and resin in 7 site tanks
- Design and construction of a package substation to power the AVDS building
- Develop proposals to improve the loading of HHISOs in the Low Level Waste facility
- Construction and Operation of the Temporary C3 facility for handling of large items of waste
- Replacement of the sewage plant with a modular treatment plant
- Repair of defects in the flood defence revetments following weather damage
Appendix A

Letter Providing Consent to Decommission and Attached Conditions

Decommissioning Project Consent No. 1

18 February 2008

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)

OLDBURY POWER STATION

The Health and Safety Executive, for the purposes of regulation 4(b) in accordance with regulation 8(3), grants consent for carrying out the project\(^1\) 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: 18 February 2008

Signed  

For and on behalf of the Health and Safety Executive

A N Hall

A person authorised to act in that behalf

\(^1\) Project as defined in regulation 2
NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR DECOMMISSIONING) REGULATIONS 1999

CONDITIONS

attached under regulation 8(4)

to Decommissioning Project Consent No. 1 granted under regulation 4(b)

OLDBURY POWER STATION

Condition 1

The project\(^1\) 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:

\(^1\) Project as defined in regulation 2
a. with reference to condition 3b, identify the mitigation measures for options that have been selected, giving reasons for their selection;
b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;
c. describe the effectiveness of the mitigation measures over time;
d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5
The licensee is required to:

a. provide the environmental management plan to the Health and Safety Executive within 90 days of the date of this Consent and every year thereafter, or within such longer time as the Executive may agree;
b. make the environmental management plan available to the public within 30 days of the plan being sent to the Health and Safety Executive, or within such longer time as the Executive may agree; the plan may replace earlier versions.

Condition 6
The licensee is required to provide notice to the Health and Safety Executive of any significant change to a mitigation measure to prevent, reduce and where possible offset any major adverse effects on the environment no less than 30 days before the change is made, or within such shorter time as the Executive may agree.

Dated: 18 February 2008

Signed For and on behalf of the

A. N. Hall Health and Safety Executive
Dr A N Hall
A person authorised to act in that behalf
### Example Environmental Risk Assessment Form

**Environmental Risk Assessment Form**

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Consider Potential For <em>(in the absence of mitigation)</em>:</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Discharges / Permit (Liquid)</td>
<td>In the absence of mitigation, does the work have the potential to breach an existing Environmental Permit, challenge any of the conditions or require a new Environmental Permit?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Discharges / Permit (Gaseous)</td>
<td>In the absence of mitigation, does the work have the potential to breach an existing Environmental Permit, challenge any of the conditions or require a new Environmental Permit? This includes any potential impact on Greenhouse Gas Emissions Permit?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Liquid Substances / Containment</td>
<td>Will the work involve the use, generation or storage of chemicals, oils, fuels, or other hazardous liquids and/or have the potential to impact the integrity of existing liquid containment <em>e.g.</em> tanks, bunds in the absence of mitigation? <em>Note: A COSHH assessment must be provided for all chemicals and hazardous substances used</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Other Licenses / Consents</td>
<td>Does the work require any other environmental licenses, authorisation, consents or registration <em>e.g.</em> wildlife management license, marine consents, PCB registration?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Drainage</td>
<td>Will the work impact or have the potential to impact any site drainage systems <em>e.g.</em> changes to configuration, cleaning in the absence of mitigation is there any potential for substances to enter the drainage system or lead to damage to the system?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Land Quality</td>
<td>Could the work have significant impacts on land quality or groundwater in the absence of mitigations? This includes potential for any ground or groundwater contamination (spillage), changes to groundwater levels and flows or mobilisation of contaminants? Where excavations affecting the Sub-surface (unmade ground) are proposed <em>tick Yes and a separate Land Quality Assessment will need to be provided by an Environmental SQEP to accompany this form.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Noise, Vibration &amp; Light</td>
<td>Could the work have a significant effect on noise, vibration or light levels to site staff or local residents in the absence of mitigation?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Plant / Equipment</td>
<td>Does the work involve bringing plant / equipment onto site containing hazardous substances? Does the work involve breaking into systems which could have the potential to contain hazardous liquids or gases <em>e.g.</em> chemically dosed water systems, oil filled cables, Ozone Depleting Substances? Will the work result in changes to plant configuration or leave residual hazard which will need to be managed and updated on the aspects register? <em>E.g.</em> Operational to Redundant plant which may be bulk drained but contain residuals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Air Quality &amp; Dust</td>
<td>Could the work have a significant impact on air quality and dust in the absence of mitigations? <em>E.g.</em> emissions of gaseous pollutants and particulate, raising and dispersion of dust (or creating dust source such as stockpiled material) both on and off site.</td>
<td></td>
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<tr>
<td>10</td>
<td>Ecology</td>
<td>Could the work have significant impacts on ecology in the absence of mitigation? This includes impacts to protected species and habitats, such as working near the estuary or buildings used for nesting etc.?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Traffic &amp; Transport</td>
<td>Could the work have significant impacts on traffic and access in the absence of mitigation? Consider significant increase in HGV traffic on/off site, disturbance to local residents, impacts on safety / environment, mud on roads etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No.</td>
<td>Parameter</td>
<td>Mitigation to be implemented</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-----</td>
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<td>------------------------------------------------------------------</td>
<td></td>
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<tr>
<td>12</td>
<td>Landscape &amp; Visual</td>
<td>Could the work have significant impacts on landscape and views in the absence of mitigation? This includes visual changes to exteriors of buildings and structures, or landscape changes within the site boundary.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Socio-economic</td>
<td>Could the work have significant impacts on socio-economic factors in the local population in the absence of mitigation? This includes changes to employment and expenditure, accommodation and housing and local services etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Material Management</td>
<td>Will the work require the management of material or treatment of waste for the purposes of reuse on site e.g. infilling voids, adoption of CLAIRE Protocol</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>Resources</td>
<td>Will the work lead to a significant increase in resource use e.g. energy, water, diesel / fuel, chemicals, change the carbon footprint or any other changes that might require a review of the Environmental Aspects Register?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For any parameters ticked yes, identify in the table below the mitigations to be implemented for each:

<table>
<thead>
<tr>
<th>No.</th>
<th>Parameter</th>
<th>Mitigation to be Implemented</th>
</tr>
</thead>
</table>

NRE / Site Engineer  
Name: ___________________________  
Signature: ___________________________  
Date: ___________________________

Environmental SQEP  
Name: ___________________________  
Signature: ___________________________  
Date: ___________________________

This Risk Assessment must be completed and signed to be produced at point of work authorisation and retained for the duration of the works. All mitigations must be implemented as described.
Appendix C

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

- HGVs will be required to exit the site through the Main Gate and, where appropriate, to follow preferred routes to and from the strategic road network;
- The numbers of individual transport movements will be minimised as far as is reasonably practicable;
- Employees and contractors will be encouraged to share transport (or use public transport) when travelling to and from the Oldbury Site;
- Magnox Limited and their contractors will be required to maintain their vehicles in a good standard of condition;
- When appropriate, vehicles leaving the site will be subject to wheel wash and inspection to ensure that earth and other material is not unduly dispersed;
- On site roads will be swept as necessary to minimise the spread of material off-site and/or into drains or watercourses;
- Signage will be provided at site exits to reinforce the contract requirements on vehicle drivers;
- Where practicable, transport distances will be minimised by the use of local recycling companies, disposal sites, etc.;
- Most HGV transport movements will be undertaken during normal working hours; and
- In the event of need for an abnormal load to be transported, a specific plan for this movement will be developed.