

2011 Environmental Management Plan

Issue 6



Sizewell A Site



Executive Summary

In September 2005 Magnox Electric Ltd (now Magnox Ltd) applied for consent to decommission Sizewell A under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 as amended.

The consent was granted by the Health and Safety Executive (HSE) in May 2006. There were six conditions attached to the consent, most of which relate to the preparation and maintenance of an Environmental Management Plan. This details the ongoing mitigation measures to prevent, reduce, and, if possible, offset any significant adverse environmental effects of the decommissioning work.

This document is the sixth issue of the Sizewell A Environmental Management Plan and provides an update on the activities undertaken in the last 12 months in addition to the details of the agreed mitigation measures. This document will be re-issued annually as agreed with the Health and Safety Executive.

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

Tim Watkins, Site Director, Sizewell A

16 May 2010



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1. Introduction

Sizewell A Nuclear Site (hereafter Sizewell A) ceased generation on 31 December 2006. The site has now, in line with government policy, entered a period of decommissioning. During this time the plant and buildings associated with electricity generation will be systematically removed. Prior to the commencement of this work Magnox Electric Ltd (now Magnox Ltd), the licensee of the site, was legally required to gain consent to carry out the decommissioning project from the Health and Safety Executive (HSE).

Following a period of extensive public consultation the HSE granted consent in May 2006, subject to certain conditions (listed in full in Appendix A). Condition 2 requires the licensee to prepare an Environmental Management Plan (EMP) which shall:

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

It is a requirement of the conditions attached to the consent to describe the effectiveness of the mitigation measures over time. This EMP is therefore a living document that will be periodically reviewed and revised throughout the decommissioning project. The EMP will be reissued annually as agreed with the HSE. Other supporting information which may be of interest to the public, but is not directly required by the consent conditions, is located in the Appendices B, C and D (e.g. stakeholder management, biodiversity).

A detailed decision report was prepared by the HSE in 2006, describing the content of the conditions attached to the consent, the main reasons and considerations for the decision. Copies of this document are available from:

Health and Safety Executive
Knowledge Centre
Building 1
Redgrave Court
Merton Road
Bootle
Merseyside
L20 7HS

Tel: 0151 951 4000
email: knowledge.centre@hse.gsi.gov.uk

Or via the internet from:
<http://www.hse.gov.uk/nuclear/nuc25.pdf>

Communications and Stakeholder Engagement (CASE) Team
Nuclear Directorate general enquiries
CASE Team
Desk 27
4N.1 Redgrave Court
Merton Road
Bootle
L20 7HS

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

The Site Director
Sizewell A Site
Nr Leiston
Suffolk
IP16 4UE



2. Scope of the Environmental Management Plan

Geographical Scope

The EMP provides a means of ensuring that appropriate environmental monitoring is undertaken during the works and that amendments to the mitigations are identified and implemented as necessary.

The project area at Sizewell is the area contained within the Nuclear Licensed Site covering an area of approximately 10 hectares; the area consists of a number of both temporary and permanent structures in the form of brick buildings and prefabricated buildings, as well as a road network. In addition to this the project area includes the two off-shore structures that mark the cooling water inlet and outlet points and an area of land to the north of the site belonging to Sizewell B that may be required at some future point for material and equipment lay down points.

Duration

The decommissioning project at Sizewell A is divided into three phases, Care & Maintenance Preparations, Care & Maintenance and Final Site Clearance.

These phases are explained in Figure 1.

The mitigation measures listed in section 4.1 of this EMP are similarly divided into the three phases.

Mitigation measures may change in the future in light of experience and developing technologies. The impacts of the later phases of work have been documented in the original Environmental Statement, but due to the difficulty in predicting the nature of environmental and regulatory regimes over long periods, more confidence should be attached to the assessment relating to the earlier stages of the project. Where mitigation measures are still to be identified, developed in more detail, or require changes, these will be described in subsequent issues of the EMP together with the reasons for any changes made.

Topics

Beneficial or adverse environmental impacts are divided into 9 topic areas within the Environmental Statement as are the mitigation measures described in this EMP (see Figure 2).

In addition to the mitigation measures, a brief description of the Sizewell A 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 & Maintenance Preparations. Further details for all phases of the decommissioning project at Sizewell A are presented in the Environmental Statement.

Figure 1. **Summary of the main decommissioning phases**

- **Care & Maintenance Preparations.** During this phase all of the radioactive and non-radioactive plant and buildings on the site (other than the reactor buildings) are dismantled. Intermediate level radioactive waste (ILW) is retrieved from current storage locations as appropriate, processed and then placed into a new purpose-built store. Upon completion of C&MP, the site will have been put into a passively safe state where the need for human intervention to maintain acceptable conditions is minimised, i.e. the care and maintenance period (C&M).
- **Care & Maintenance** is the second phase 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 to ensure that it remains in a passively safe and secure state. The site will continue to be the subject of a nuclear site license during this period.
- **Final Site Clearance** is the final phase of decommissioning, which is expected to last about 10 years. It involves the dismantling of the remaining structures on the site, including the reactors, the clearance of any residual radioactivity to the applicable standards and the de-licensing of the site so that it can be made available for alternative use, as appropriate.

Figure 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.**
- **Traffic and Transport.**

3. The Site and Surrounding Area

Site Description

The reactor building comprises two reactors of the gas-cooled magnox type¹. Each reactor pressure vessel is spherical, made from steel and is situated within a large concrete bioshield. Contained within each pressure vessel are the graphite core and a range of monitoring and control equipment. During operation the reactors were cooled using carbon dioxide. Each reactor has four boilers, all of which are external to the bioshield, which converted water to steam in order to drive the turbines located inside the turbine hall. Cooling of the steam to return it to water was provided by seawater passed through condensing units located on the floor of the turbine hall beneath the turbines. The cooling water intake and outfall structures are located offshore and are connected to the turbine hall by means of large underground culverts.

Other buildings and plant associated with operation of the site include the cooling water pumphouse, the National Grid substation, workshops, stores and offices.

Surrounding Landscape

The Sizewell A Site is located on the Suffolk Coast, just north of Sizewell village, at an altitude of approximately 9.455m Above Ordnance Datum (AOD). British Energy's Sizewell B station adjoins the A site to the north. The coastal area is relatively low-lying and, with the exception of marginally more elevated ground to the west and north-west, remains below the 30m AOD contour. This gently undulating landform combined with existing trees and hedgerows tends to screen most inland views of both the A and B Sites in all but the closest viewpoints, with some notable exceptions just north of Leiston.

Transport Infrastructure

The main vehicular access route to Sizewell A Site from the national highway network is by way of the A12 which runs to the west of the Site. The most appropriate route for HGV traffic travelling from the A12 is via the B1122 from Yoxford to Lover's Lane and then onwards to the C228 to the Site access road. There is a limited bus service to Sizewell village, otherwise the nearest bus services are at Leiston. There is no rail access close to the site; the nearest station for passenger services is at Saxmundham some 5.5 miles (9km) from the site. There is a specific facility for cyclists and pedestrians which connects the Site to Leiston; this is in the form of a shared track alongside the C228. In general, the number of staff walking or cycling to work is very low.

Local Watercourses

The main surface water feature in the area is the coastal water of the North Sea. In addition there are several surface freshwater features within 2km of the site, which form a network of drainage ditches immediately to the west of the site boundary, called the Sizewell Belts. A small pond is also present near the former Visitors Centre.

The site is located within a catchment area approximately 8km² in size. This catchment drains to the Sizewell Belts and thence to the north via an artificial channel (the Leiston Brook) eventually to join the Minsmere River approximately 2km to the north of the site. The Minsmere River discharges to the North Sea through a sluice gate. To the south of the site surface water runoff is directed to the Hundred River, approximately 2.2km

distant; this is a separate catchment area from that within which the Sizewell A site is located.

Geology and Hydrogeology

An area of made ground directly underlies the Sizewell A site, previous surface deposits having likely been removed or reworked during the site construction. However, there are other loosely compacted deposits (drift) within the locality. An area of peat is located to the west of the site within the low-lying wetland area called the Sizewell Belts. To the north of the site and beyond Sizewell B is an area of marine tidal flat mud extending northwards to the Minsmere River and Minsmere Levels area and part of the Minsmere-Walberswick Heaths and Marshes Site of Special Scientific Interest (SSSI)/Special Area of Conservation (SAC) and Minsmere-Walberswick Special Protection Area (SPA)/Ramsar site. At a distance of between 200 and 1,000 metres away from the site to the north, south and west, glaciofluvial drift deposits become more dominant. Isolated pockets of glacial clay (till), the so-called Lowestoft Till, are also present.

Below the made ground of the site are sandy deposits belonging to the Crag Group of Plio-Pleistocene age. Beneath approximately 60m of Crag is the Harwich Formation consisting of silty sandstone with volcanic ash layers and mudstones. The Crag and the Harwich strata are classed as minor aquifers.

Sensitivity of the Receiving Environment

The nearest settlements within a 10km radius of the site are Sizewell village, Leiston, Aldeburgh, Saxmundham, Snape and Yoxford.

Sizewell A lies within the Suffolk Coast and Heaths Area of Outstanding Natural Beauty (AONB) which has been designated by the Countryside Commission (now Natural England) and confirmed by the government. A narrow coastal strip of the Suffolk Coast within the AONB in the vicinity of Sizewell has been defined by Natural England as Heritage Coast. Three Special Landscape Areas (SLA) are located to the west of the AONB, namely the Blythe, Minsmere and Hundred SLAs.

The following sites of nature conservation interest are located within the Sizewell vicinity:

- Minsmere-Walberswick Heaths and Marshes Special Area of Conservation (SAC) and Site of Special Scientific Interest (SSSI).
- Minsmere-Walberswick Special Protection Area (SPA), and Ramsar Site.
- Sizewell Marshes SSSI.
- Offshore structures used by Kittiwakes etc for roosting and breeding.
- The Sandlings SPA.
- Leiston-Aldeburgh SSSI.
- Westleton Heath National Nature Reserve (NNR).
- Walberswick (Suffolk Coast) NNR.
- Dunwich Heath Nature Reserve.
- Alde-Ore SPA.
- North Warren RSPB reserve.

There are no Scheduled Monuments on the site, the nearest is Leiston Abbey and moat. There are no listed buildings or designated geological sites of conservation value or Regionally Important Geological Sites (RIGS) within 2km of the site.

¹ 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. Mitigation Measures

4.1 Mitigation measures that have been identified

Introduction

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

Sizewell A site will notify the HSE of any significant change to a mitigation measure no less than 30 days before the change is made, or within such shorter time as the Executive may agree.

The following tables list the mitigation measures for each phase of the decommissioning project at Sizewell A.

Care & Maintenance Preparations Phase

Mitigation measures already identified (Condition 3a)

Topic	Nature of impact	Mitigation Measures Proposed
Air Quality and Dust	Dust Emissions (from on site), Increase in site dust emissions due to construction, demolition and waste/materials handling operations etc which could impact on residential and industrial receptors.	As appropriate: <ul style="list-style-type: none"> • Use of the Building Research Establishment, Guidance on the Control of Dust from Construction and Demolition Activities (2003). • On site roads to be regularly cleaned of mud/dust deposits, including the use of recirculating water wheel washers and road cleaners as appropriate; and sheeting of vehicles carrying potentially dusty loads. • Minimisation of unnecessary material and waste handling as far as practicable. • Use of water sprays for external demolition activities as appropriate. • Use of water sprays during outside infill operations. • Avoidance of vehicular use on unsurfaced (soft) ground where possible and limits on vehicle speeds on such surfaces where it can not be avoided. • Use of water sprays during particularly windy or dry conditions. • 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. • Sheeting or seeding of surfaces and/or use of wind fences as appropriate. • Covering of containers and/or use of wind fences as appropriate.
	Dust emissions due to any use of explosives.	Such activities will not be carried out under particularly dry or windy conditions, and local residents and Sizewell B will be informed in advance.
	Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dusty loads.	As appropriate: <ul style="list-style-type: none"> • Sheeting of lorries carrying dusty loads. • Provision of wheel washing for, heavy goods vehicles on leaving the site.
Archaeology and Cultural Heritage	No significant adverse environmental impacts identified arising from decommissioning activities	

Care & Maintenance Preparations Phase

Mitigation measures already identified (Condition 3a) - continued

Topic	Nature of impact	Mitigation Measures Proposed
Ecology	Loss of nest sites for Black Redstarts.	Provision of additional, appropriately designed nest boxes prior to the commencement of site works.
	Loss of foraging habitat for Black Redstarts	Minimisation of habitat loss, where reasonably practicable. At any one time parts of the site will provide potentially suitable foraging habitat for Black Redstart.
	Incidental mortality/ Noise (including explosions) and visual disturbance of Black Redstarts	Employee awareness programme and experienced individual tasked with identifying active nest sites.
	Loss of nesting habitat for Kittiwakes.	Provision of additional nesting sites for Kittiwakes at the Lowestoft colony.
	Incidental mortality of Reptiles.	Reptile proof fencing to be used to prevent reptiles from moving into working areas. Reptile proof fencing should be installed prior to works commencing, allowing a period of time for reptiles to move out of the working area.
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.	<p>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.</p> <ul style="list-style-type: none"> Controlled access to or from known or potentially contaminated working areas as appropriate. Use of recirculating wheel washers on lorries leaving site as appropriate. See also measures under 'Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.' See also dust control measures.
	Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground coverage.	Investigation of contaminated soils prior to removal of hardstandings or buildings/foundations (possibly by desk study alone if appropriate), with prior remediation if necessary.
	Mobilisation of existing contamination by direct rainwater infiltration due to the creation of temporary open excavations.	<ul style="list-style-type: none"> 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. Excavation dewatering, if necessary, with monitoring and appropriate management/disposal of any waters arising. Tenting of exposed areas or excavations, if necessary.
	The potential contamination of ground and groundwater due to contaminated water entering those external drains that run to soakaways.	See mitigation measures required to prevent contamination of soils and/or groundwater; and spills and leaks.

Care & Maintenance Preparations Phase

Mitigation measures already identified (Condition 3a) - continued

Topic	Nature of impact	Mitigation Measures Proposed
Geology, Hydrogeology and Soils	Creation of new contaminant migration pathways (e.g. due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).	<ul style="list-style-type: none"> Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS 10175 (Investigation of Potentially Contaminated Sites – Code of Practice). Compliance with Environment Agency (EA) Technical Report P5-065/TR (Technical Aspects of Site Investigation). Production of risk assessments, method statements and contingency plans.
	Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.	<ul style="list-style-type: none"> 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.
	Inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or materials as infill materials.	<ul style="list-style-type: none"> Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate. Authorised disposal of unsuitable soils, wastes and materials.
	Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances.	<ul style="list-style-type: none"> Bundling 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 PPG 6, with trained staff only to operate facilities. Emergency spill response planning according to PPG 21, including spill kits kept on site and trained staff available.
	Derogation of existing groundwater abstractions due to on site dewatering operations, if any.	If necessary, placement of recharge barriers as appropriate (i.e. inject back into the ground an equivalent amount of water to that extracted).
	Changes in groundwater flow/water table regime beneath near-by sites designated for their ecological value due to on site dewatering operations, if any.	If necessary: <ul style="list-style-type: none"> Placement of physical barriers (e.g. sheet piles) and recharge barriers appropriate (i.e. injection back into the ground an equivalent amount of water to that extracted). Provision of compensation flows directly into the feature affected.

Care & Maintenance Preparations Phase

Mitigation measures already identified (Condition 3a) - continued

Topic	Nature of impact	Mitigation Measures Proposed
Landscape and Visual	Light spill from site works	Any new lighting to be installed on site should be directional lighting.
Noise and Vibration	Local residential properties, recreational areas & industrial receptors General changes to noise directly from the site and associated changes in traffic.	As appropriate: <ul style="list-style-type: none"> • Use of equipment fitted with effective silencers where practicable. • 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. • Local residents informed of exceptional activities. • No potentially significant external working outside of normal working hours without prior agreement with the local authority. • All construction activity to be undertaken in accordance with good practice as described by British Standard 5228:1997² 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.
	Noise & vibration caused by explosive demolition (if used).	Use of good blasting practice and warning members of the public and the operators of Sizewell B in advance of demolition activities using explosives.
Socio-economic	Long term loss of Direct Employment.	Magnox Ltd will encourage its contractors to make use of local labour, equipment and services as far as practicable. Magnox Ltd will attempt to redeploy affected staff, provide opportunities for early retirement & support staff retraining/reskilling.
Surface Water Quality and Drainage	Changes in North Sea water quality due to the potential release of turbid and/or contaminated water from decommissioning activities on the site.	Where necessary: <ul style="list-style-type: none"> • 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 recirculating water wheel washers and road cleaners as appropriate. • Sheetting or seeding of any stockpiles of soil or potentially contaminating materials. • 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.
	Changes in North Sea water quality due to minor spills and leaks of non-radioactive substances, if they occurred.	<ul style="list-style-type: none"> • 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. • Appropriate protocols for chemicals and fuel handling in line with EA PPG6, with trained staff only to operate facilities. • Emergency/spill response planning according to PPG21; including spill kits kept on site and trained staff.

²BS5228 : 1997 has been superseded by BS5228 : 2009 parts 1 and 2.

Care & Maintenance Preparations Phase

Mitigation measures already identified (Condition 3a) - continued

Topic	Nature of impact	Mitigation Measures Proposed
Traffic and Transport	Impacts on safety on roads with an accident record worse than average (King George's Avenue, Leiston).	No specific mitigation is possible because of the absence of specific accident clusters and causes. However, a Travel Plan is incorporated into the site Management Control Procedure for Environmental Management. This encourages among other action communal transport and car sharing. Personnel are encouraged to avoid the centre of Leiston if possible. Heavy Goods Vehicles are to use B1122 Lovers Lane-C228 route between the A12 and power station as appropriate.
	Impacts on safety etc due to mud on roads.	Wheel washing of lorries as necessary.

Care & Maintenance Phase

Mitigation measures already identified (Condition 3a)

Topic	Nature of impact	Mitigation Measures Proposed
Landscape and Visual	During Care and Maintenance no significant works are planned with the possible exception of recladding the reactor buildings (should this be required). It is anticipated that the reactors would be reclad in a similar material to that used at the start of Care and Maintenance hence the visual impact will remain unchanged.	No mitigation measures are required.
No other significant adverse environmental Impacts were identified during Care & Maintenance.		

Final Site Clearance Phase

Mitigation measures already identified (Condition 3a)

Topic	Nature of impact	Mitigation Measures Proposed
Air Quality and Dust	Increase in site dust emissions due to construction, demolition and waste/materials handling operations etc which could impact on residential and industrial receptors.	As appropriate: <ul style="list-style-type: none"> • Use of the Building Research Establishment, Guidance on the Control of Dust from Construction and Demolition Activities (2003). • On site roads to be regularly cleaned of mud/dust deposits, including the use of recirculating water wheel washers and road cleaners as appropriate; and sheeting of vehicles carrying potentially dusty loads. • Minimisation of unnecessary material and waste handling as far as practicable. • Use of water sprays for external demolition activities as appropriate; • Use of water sprays during outside infill operations. • Avoidance of vehicular use on unsurfaced (soft) ground where possible and limits on vehicle speeds on such surfaces where it can not be avoided. • Use of water sprays during particularly windy or dry conditions. • 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. • Sheeting or seeding of surfaces and/or use of wind fences as appropriate. • Covering of containers and/or use of wind fences as appropriate.
	Dust emissions due to any use of explosives.	Such activities will not be carried out under particularly dry or windy conditions, and local residents and Sizewell B will be informed in advance.
	Increase in dust at residential properties along traffic routes due to soiled vehicles or vehicles carrying dust loads.	As appropriate: <ul style="list-style-type: none"> • Sheeting of lorries carrying dusty loads. • Provision of wheel washing for, as a minimum, heavy goods vehicles on leaving the site.
Archaeology and Cultural Heritage	No significant adverse environmental impacts identified arising from decommissioning activities.	
Ecology	Loss of nest sites for Black Redstarts.	Provision of additional, appropriately designed nest boxes prior to the commencement of site works.
	Loss of foraging habitat for Black Redstarts	Minimisation of habitat loss, where reasonably practicable. At any one time parts of the site will provide potentially suitable foraging habitat for Black Redstart.
	Incidental mortality/Noise (including explosions) and visual disturbance of Black Redstarts	Employee awareness programme and experienced individual tasked with identifying active nest sites.
	Incidental mortality of Reptiles.	Reptile proof fencing to be used to prevent reptiles from moving into working areas. Reptile proof fencing should be installed prior to works commencing, allowing a period of time for reptiles to move out of the working area.

Final Site Clearance Phase

Mitigation measures already identified (Condition 3a) - continued

Topic	Nature of impact	Mitigation Measures Proposed
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.	<ul style="list-style-type: none"> • 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 recirculating wheel washers on lorries leaving site as appropriate. • See also measures under 'Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.' • See also dust control measures.
	Mobilisation of existing contamination by direct rainwater infiltration due to changes in ground coverage.	Investigation of contaminated soils prior to removal of hardstandings or buildings/foundations (possibly by desk study alone if appropriate), with prior remediation if necessary.
	Mobilisation of existing contamination by direct rainwater Infiltration due to the creation of temporary open excavations.	<ul style="list-style-type: none"> • 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. • Excavation dewatering, if necessary, with monitoring and appropriate management/disposal of any waters arising. • Tenting of exposed areas or excavations, if necessary.
	The potential contamination of ground and groundwater due to contaminated water entering those external drains that run to soakaways.	<ul style="list-style-type: none"> • See mitigation measures required to prevent contamination of soils and/or groundwater; and spills and leaks.
	Creation of new contaminant migration pathways (e.g. due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).	<ul style="list-style-type: none"> • 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 P5-065/TR (Technical Aspects of Site Investigation). • Production of risk assessments, method statements and contingency plans.

Final Site Clearance Phase

Mitigation measures already identified (Condition 3a) - continued

Topic	Nature of impact	Mitigation Measures Proposed
Geology, Hydrogeology and Soils	Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.	<ul style="list-style-type: none"> • 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.
	Inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or materials as infill materials.	<ul style="list-style-type: none"> • Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate. • Authorised disposal of unsuitable soils, wastes and materials.
	Changes in soil and groundwater quality due to spills or leaks of non-radioactive substances.	<ul style="list-style-type: none"> • 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, with trained staff only to operate facilities. • Emergency spill response planning according to PPG21, including spill kits kept on site and trained staff available.
	Derogation of existing groundwater abstractions due to on site dewatering operations, if any.	If necessary, placement of recharge barriers as appropriate (i.e. inject back into the ground an equivalent amount of water to that extracted).
	Changes in groundwater flow/water table regime beneath near-by sites designated for their ecological value due to on site dewatering operations, if any.	<p>If necessary:</p> <ul style="list-style-type: none"> • Placement of physical barriers (e.g. sheet piles) and recharge barriers appropriate (i.e. injection back into the ground an equivalent amount of water to that extracted). • Provision of compensation flows directly into the feature affected.
Landscape and Visual	Light spill	Any new lighting to be installed on site should be directional lighting.

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

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

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

Environmental Impact
Currently no such activities have been identified.

5. Implementation of the Environmental Management Plan

It is a requirement of the conditions attached to the consent (See Appendix A), to implement the mitigation measures and to describe their effectiveness. This section covers the measures (as identified in section 4) that have been implemented (with details of some of the projects implemented during 2010/2011) and describes how the effectiveness of these measures has been measured.

Note: Not all mitigation measures were required during 2010/11 due to the types of activities being undertaken and the lack of potential for a significant adverse impact.

Process for Implementation of Mitigation Measures

Sizewell Site Management Control Procedures (See Appendix D) ensure that decommissioning activities are carried out in accordance with the Environmental Management Plan. All changes to the system are assessed, during the proposal stage, against the requirements of the Environmental Management Plan and, where appropriate, mitigation measures are put in place to prevent impacts identified. This is a part of the integrated management system on site that is certified to ISO 9001, ISO 14001 and OHSAS 18001. In addition, where there is the potential for an activity to produce significant discharges or disposals, either radioactive or non-radioactive, the site undertakes Best available Techniques (BAT) studies.



Figure 3: Sizewell A Environmental Monitoring

Process for Determining Effectiveness of Mitigation Measures

The site aims to continually monitor the effectiveness of mitigation measures over time. Where mitigation measures are not sufficiently effective, they will be reviewed and amended as necessary to ensure success in minimising significant adverse environmental impacts. A key part of this process is the close interaction between the project teams and the environment team, ensuring that mitigation measures are considered, applied and, where relevant, reviewed through out the lifespan of the project. The effectiveness of the mitigations is monitored in a variety of ways as described below.

1) Environmental Performance Monitoring

Environmental performance monitoring (e.g. dust, noise, groundwater monitoring) is performed using specialist equipment. This allows assessment of environmental impacts post-mitigation in addition to being of use for determining baseline conditions. The main use of post mitigation environmental monitoring will be for larger projects, such as the demolition of buildings or movement of large quantities of spoil. The need for this form of monitoring is determined on an individual basis for each project based on the anticipated activities and the potential for significant adverse impact.

2) Visual evidence

Inspections of the work area both prior to, during and after project works are used to assess the requirements for mitigation, ongoing suitability of the mitigations and overall success in minimising significant adverse impacts. Where it is deemed appropriate photographic evidence can be gathered to support the assessment of effectiveness.

Routine site tours by suitably qualified individuals are used to identify areas of success and areas for improvement. These tours are used to monitor the effectiveness of mitigations on environmental receptors.

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

This 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 are encouraged to report conditions which are unsafe or pose a threat to the environment. As part of this system events are investigated and where necessary remedial actions are put in place.

Examples

Limited decommissioning work has been undertaken during the period April 2010 to March 2011. This resulted in few potential environmental impacts; therefore many of the mitigation measures described in the previous section have not been required. It is therefore not possible to report on the effectiveness of these mitigation measures.



Figure 4: **Area restored after excavations**

From April 2010 to March 2011 a number of excavation works were carried out in support of on site works for the Greater Gabbard Wind Farm grid connection and improvements to the waste handling area. Mitigation measures associated with the excavation works included sampling of soil to determine presence/absence of contamination, protection of excavations and protection of spoil heaps. Wherever possible spoil has been stored and used to refill the excavations following the completion of works as a way to minimise unnecessary handling of spoil.



Figure 5: **Black redstart leaving nest**

Other measures mitigated potential impacts on groundwater and surface water quality as well as ground contamination. Those included bunding of chemical and fuel storage, appropriate protocols for chemicals and fuel handling, use of emergency spill response planning. Effectiveness of these measures can be ascertained from the soil samples, groundwater monitoring results, event reporting analysis and various site inspections.



Figure 6: **Black Redstart sighted at Sizewell A**

Four breeding pairs of Black Redstarts were identified in and around the site. One of these pairs nested in a nestbox supplied by the site and another pair in the open end of a redundant pipe. The other pairs were confirmed breeding (seen singing and with their young), but the nest sites could not be identified. This provided evidence that mitigation measures implemented were effective. Those measures included provision of nest boxes, minimisation of habitat loss, and implementation of employee awareness programme.

6. Changes to the Environmental Management Plan

There are no significant changes to the mitigation measures that were submitted in the Environmental Statement and reported in previous issues of the Environmental Management Plan. Sizewell Site will notify the HSE of any significant change to a mitigation measure no less than 30 days before the change is made, or within such shorter time as the executive may agree.

7. Distribution of the EMP

In addition to the submission of this EMP to the HSE, Magnox Ltd will also provide copies to the:

- Sizewell A and B Stakeholder Group
- Nuclear Decommissioning Authority.

This EMP can be viewed at the following locations:

- Leiston Library, Old Post Office Square, Main Street, IP16 4ER.
- Aldeburgh Library, Victoria Road, Aldeburgh, IP15 5EG.
- Saxmundham Library, County Offices, Street Farm Road, Saxmundham, IP17 1AL.
- Southwold Library, North Green, Southwold, IP18 6AT.
- Woodbridge Library, New Street, Woodbridge, IP12 1DT.
- Framlingham Library, The Old Court House, Bridge Street, Framlingham, IP13 9BA.
- Wickham Market Library, Resource Centre, Chapel Lane, Wickham Market, IP13 OSD.
-

8. Definitions

AOD	Above Ordinance Datum	NNR	National Nature Reserve
AONB	Area of Outstanding Natural Beauty	OHSAS 18001	Accreditation system for Occupational Health and Safety Management Systems
BAP	Biodiversity Action Plan	RIGS	Regionally Important Geological Sites
EMP	Environmental Management Plan	SAC	Special Area of Conservation
FED	Fuel Element Debris	SLA	Special Landscape Areas
HSE	Health and Safety Executive	SPA	Special Protection Area
ISO 9001	Accreditation system for Quality Assurance	SSSI	Site of Special Scientific Interest
ISO 14001	Accreditation system for Environmental Management Systems		

APPENDIX A

Letter Providing Consent to Decommission and Attached Conditions

Decommissioning Project Consent No.1

May 2006

**NUCLEAR REACTORS (ENVIRONMENTAL IMPACT ASSESSMENT FOR
DECOMMISSIONING) REGULATIONS 1999**

CONSENT

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

SIZEWELL A POWER STATION

The Health and Safety Executive, for the purposes of regulation 4(b) in accordance with regulation 8 (3), hereby grants consent for carrying out the project¹ applied for under regulation 4(a), in particular, to remove all buildings except the reactor buildings, alter the reactor buildings for a period of deferment, retrieve and package operational intermediate level waste, 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:

For and on behalf of the
Health and Safety Executive

Signed

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

**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)

SIZEWELL A POWER STATION

Condition 1

The project shall commence before the expiration of five years from the date of this Consent.

Condition 2

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

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

Condition 3

Within 90 days of the date of this Consent, with reference to the Environmental Statement provided under regulation 5(1) and evidence to verify information in the Environmental Statement, provided under regulation 10(9), the environmental management plan shall:

- a. list the mitigation measures that are already identified in the Environmental Statement and evidence submitted to verify information in the Environmental Statement;
- b. list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future;
- c. list the work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future.

Condition 4

Subsequent to condition 3, the environmental management plan shall:

- a. with reference to condition 3b, identify the mitigation measures for options that have been selected, giving reasons for their selection;
- b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;
- c. describe the effectiveness of the mitigation measures over time;
- d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5

The licensee is required to:

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

Condition 6

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

Dated:

For and on behalf of the
Health and Safety Executive
Signed

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

APPENDIX B

Biodiversity Action Plan

Sizewell A is committed to delivery of a Biodiversity Action Plan which covers activities to protect and enhance the environment in and around the Sizewell A site. This work is above and beyond the regulatory requirements with which the site must comply.

The current Biodiversity Action Plan covers work to be undertaken during the period 2011-2013.

The objectives of the BAP are:

- To enhance and maintain habitats to maximise the number of species of flora and fauna found in and around the land managed by Sizewell A where consistent with safety and operational constraints.
- To continue to manage our land responsibly during the transitions associated with decommissioning of a nuclear site, working within the scope of the site decommissioning consent and Environmental Management Plan.
- To raise awareness and understanding amongst workers and the general public of the importance of protecting biodiversity.
- To improve visual amenity of the site and provide pleasant surroundings for workers and local residents.
- To enhance relations between Sizewell A, the public and local residents.

In order to achieve these objectives targets, including the following, have been set;

- Gap planting in Hill Wood
- Monitoring of Black redstarts, reptiles, grassed areas and shingle. To include assessment of site habitats for potential enhancement.
- Installation of 2 nest boxes to encourage Peregrine Falcons to nest on site.
- Construction and placement of large nest boxes specially designed to encourage Black Redstarts.
- Continuation of beach surveys for coastal erosion in conjunction with work carried out by the Sizewell Shoreline Management Group

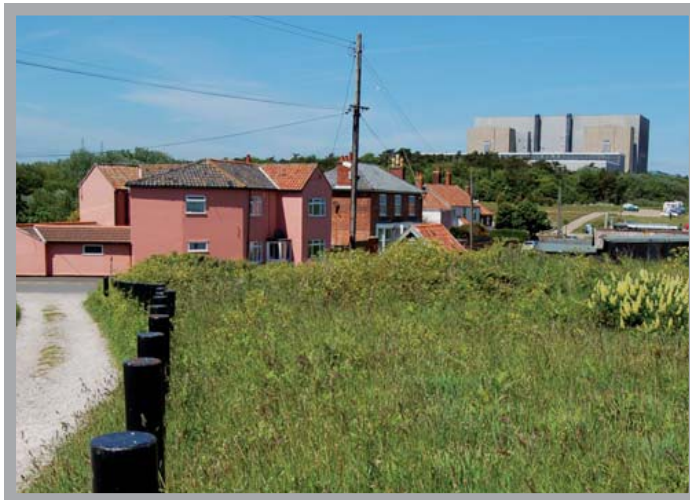


Figure 7: Sizewell village with Sizewell A in the background

APPENDIX C

Site procedures for minimisation of impacts — DPAF

ENVIRONMENTAL IMPACT AND REGULATORY COMPLIANCE			
EIADR 99 ENVIRONMENTAL IMPACT ASSESSMENT PARAMETERS			
Any change to the overall Decommissioning Project and the Environmental Statement caused by the proposal must be evaluated by an Environmental SQEP using the following checklist. The questions are used to determine if the project or modification could challenge the identified Environmental Impacts and their associated mitigations already identified in the Environmental Statement. If so, then this is potentially a Significant Adverse Environmental Effect.			
Parameter	CONSIDER POTENTIAL FOR:	NO	YES
Noise & Vibration	Could the proposal challenge the environmental impacts identified for noise or vibration? For example the effect on local residents or site staff		
Air quality and climate	Could the proposal challenge the environmental impacts identified for air quality and dust? This includes emissions of gaseous pollutants and particulate, raising and dispersion of dust, both on and off site.		
Geology, Hydrology and Soils	Could the proposal challenge the environmental impacts identified for soils and groundwater? This includes erosion of soils or change of soil quality, groundwater quality, levels and flows, mobilisation of ground contaminants, including contamination of land.		
Surface water quality and drainage	Could the proposal challenge the environmental impacts of chemicals or activity entering and contaminating site drainage, natural watercourses or the sea. Also, changes to: on-site flood risks, sediment loading, erosion and flooding of ditches, coastal morphology; include liquid discharges?		
Ecology	Could the proposal challenge the environmental impacts identified on local habitats of surrounding woodland, scrub, marsh, grassland and coastal area?		
Traffic and transport	Could the proposal challenge the environmental impacts identified regarding changes in the level and / or type of traffic, considering capacity, safety and environmental aspects?		
Landscape and visual	Could the proposal challenge the environmental impacts identified regarding changes in visual impact of buildings, structures or landscape changes of the station from all areas from which it is visible?		
Socio-economic	Could the proposal challenge the environmental impacts identified regarding the employment and expenditure profile of the local population, accommodation and housing markets, local services, etc.?		
Heritage	Could there be a challenge the environmental impacts identified for archaeological or cultural heritage?		
	Has there been an answer of 'YES' to any of questions 8.2, 8.6, 9.3.3, 9.3.4?		
For any of the parameters above for which YES is indicated an Environmental Mitigation Statement is required either as part of this proposal in box 9.5 or as a separate attached statement; an EIADR Screening Questionnaire should also be completed in accordance with			
Potential Environmental Category with respect to EIADR 99 Compliance... E1 / E2 / E3			
Name: Signed: Date:			
Environment SQEP			

OTHER ENVIRONMENTAL REGULATORY COMPLIANCE

The following checklist should be completed by an Environmental SQEP for compliance with non-radiological discharge and waste regulations and other environmental management arrangements.

PARAMETER	CONSIDER POTENTIAL FOR:	No	Yes
	Could the proposal, if inadequately conceived or executed, lead to a major (=E1) or significant (=E2) environmental consequence?		
Discharges (Liquid)	Could the proposal, if inadequately conceived or executed, lead to a breach of an existing Consent? (=E1)		
Discharges (Liquid)	Is a change to an existing Discharge Consent or a new Consent under the Water Resources Act 1991 required for this proposal? (=E1)		
Discharges (Gaseous) & Waste	Is a change to an existing Environmental Permit or new Environmental Permit required for this proposal? (formerly IPC authorisation, PPC Permit, Waste Mgmt Licence/ Exemption) (=E1)		
Discharges (Gaseous) & Waste	Could the proposal, if inadequately conceived or executed, lead to a breach of an existing Environmental Permit? (formerly IPC authorisation, PPC Permit, Waste Mgmt Licence/ Exemption) (=E1)		
Discharges (Gaseous)	Is a change to an existing Greenhouse Gas Emissions Trading Permit or a new permit required for this proposal? (=E1)		
Discharges or other Env impact	Could the proposal lead to significant increases in discharges or environmental impact under an existing Consent, authorisation or permit? (=E2)		
Waste	Could the proposal, if inadequately conceived or executed lead to a non-compliance of any other waste regulations (Duty of Care, Waste Acceptance Criteria for landfill, hazardous waste etc)? (=E2)		
Waste	Does the proposal lead to the generation of a hazardous waste?		
	Could the proposal, if inadequately conceived or executed lead to significant harm to the environment (spillage of a harmful chemical) or a non-compliance with any other environmental legislation (oil storage, groundwater regulations)? (=E2)		
Chemicals	Will the modification involve significant changes in the use, generation or storage of chemicals (e.g. new or alternative chemicals)?		
Resources	Are there significant changes in the quantity of consumable resources used, e.g. energy, water, chemicals, gases or oils?		
Land Quality	Does the proposal require an assessment in compliance with Land Quality management arrangements (of ME/S/154)?		
Environmental Aspects	Does the proposal lead to a change to an Environmental Aspect?		

If yes to any questions, then justification and / or mitigation is required (via the proposal in box 9.5 and/or a BPEO and / or Best Available Technique (BAT) assessment and/or the completion of a Land Quality Questionnaire ME/S/154 App B), and the Environmental Aspects Register shall be reviewed. If all answers are no then the category is E3 with respect to non-radiological environmental and waste regulations.

Potential Environmental Category with respect to other Environmental Regulatory Compliance... E1 / E2 / E3

Name: Signed: Date:

Environment SQEP

ENVIRONMENTAL JUSTIFICATION/ MITIGATION

If any of the environmental checklists (boxes 8, 9.1 and 9.3) have given rise to a 'YES' response, or other significant environmental issue not identified above (e.g., use of best practice) then the issues should be addressed below or referenced from other project documentation. A justification of the proposal should be provided which explains how the identified compliance challenges are to be mitigated by design provision or otherwise so that there is an acceptably low level of environmental risk. This should be completed and signed by one or more of the appropriate SQEPs (e.g., NRE for design, Environmental SQEP for regulatory compliance, RSA QE for RSA 93). If there is insufficient space, use a continuation sheet and check this box: .

Name: Signed: Date:

NRE / Environment SQEP / RSA QE

APPENDIX D

Stakeholder Engagement

Whilst decommissioning represents a new phase in the lifecycle of the site, Magnox South Ltd remains committed to engaging with stakeholders at all phases in the process. Regular meetings have been held with the Local Community Liaison Council and this process is continuing with its successor body the Sizewell A and B Stakeholder Group. In addition other organisations (see Figure 8) will be kept informed of activities at the site. The organisations listed in Figure 8 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 Figure 9.

Figure 8. Local Stakeholders

Suffolk Coastal District Council.
Suffolk County Council.
Environment Agency.
Natural England.
RSPB.
Suffolk Wildlife Trust.

Figure 9. Examples of Additional Stakeholder Activities

- Informing and liaising with the Crown Estate, Natural England, RSPB and Marine and Fisheries Agency (MFA) in preparation for dismantling of the offshore structures.
- Informing local residents of any short-term activities that may cause a noise nuisance.

The role of the Nuclear Decommissioning Authority (NDA)

The Energy Act (2004 as Amended by the Energy Act 2008) 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
- 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 Sizewell A.

APPENDIX E

Information on site working and environmental performance

Site Management and Decommissioning

General Site Management

Hours of Work

Current normal working hours are between 07:30 and 17:00 hours, Monday to Friday. 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 in order to complete specific items of work safely, and some night-time working may be required to accommodate certain activities 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.

Lighting

The existing night time illumination of the power station consists mainly of internal lights within the transparently clad parts of the reactor building and turbine hall, together with low level 'street' lights.

During Care & Maintenance Preparations and Final Site Clearance, further lighting may be necessary at times. Suitable lighting will be installed to assist in the on-site works. 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. The existing security lighting will be retained.

During Care & 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 Sizewell A will be subject to the provisions of a Travel Plan.

Decommissioning Methods

Conventional Area Decommissioning

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

The interiors of buildings will be first deplanted 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 deplanting etc is complete, demolition will be carried out using conventional methods.

All buildings will be demolished and structures removed to ground level. Once removed, the footprints of buildings will be gravelled over. Any remaining below ground building structures (e.g. basements) will be punctured to prevent 'ponding' (the accumulation of water). As far as is reasonably practicable all suitable demolition material will be retained on site to be used for the infill of deep voids, specifically those of the turbine hall basement and the cooling water pumphouse.

The only existing road/hard standing to be retained into Care & Maintenance will be the road that enters the main gate, turns right towards the reactor building, passes round the inner fence before returning to the main gate via the same approach. Otherwise, most existing hardstandings, paths and roads will be removed. However, existing car parks will be retained into the Care & Maintenance period.

Demolition of Radioactive Facilities

Radioactive plant in the reactor buildings will be decontaminated, where practicable, and dismantled. If practicable, plant and equipment will be decontaminated in situ and recycled. Examples of these decontamination processes are shown in Figure 10. 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 deplanting, buildings scheduled for demolition during Care & Maintenance Preparations will be demolished, using conventional techniques. Monitoring checks will be made on the buildings as demolition proceeds and on the resulting demolished materials prior to disposal.

Figure 10: **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 contamination is removed by 'wiping'; specialist equipment and materials are usually required.

APPENDIX E — Continued

Waste Management

Intermediate Level Radioactive Waste (ILW)

No decommissioning ILW is expected to arise during Care & Maintenance Preparations, though operational ILW is already present on the site and will continue to be generated. However there is currently no disposal route for ILW in the UK, and all ILW arisings at Sizewell A Site have been stored on site since operations began.

For operational ILW the strategy is one of retrieval and encapsulation of solid waste (except that stored in voids within the reactor bioshields) and wet waste, for storage on site until such time as an off site disposal route becomes available to receive it.

Low Level Radioactive Waste (LLW)

Solid LLW will be compacted where possible and transferred to the Low Level Waste Repository (LLWR). Operational LLW routinely arises at nuclear power stations. Because of this, LLW management facilities already exist on site, located within the inner fence, to process and package LLW before its transfer to the LLWR located near the village of Drigg in Cumbria. During Care & Maintenance Preparations the processing and disposal of such operational LLW to the LLWR facility will continue. Liquid radioactive effluent requiring disposal is transferred to the Active Effluent Treatment Plant (AETP) for processing and disposal to the sea. Once the AETP is decommissioned, a mobile facility will be used to treat any remaining potentially radioactive liquids.

Non-radioactive Hazardous Wastes

All hazardous wastes will be managed by the Site Waste Team. Disposal of hazardous waste will be via authorised contractors who hold the appropriate Waste Carrier's Licence and Environmental Permits or exemptions for the waste management activities to be undertaken. These will be checked for validity before any disposal occurs. The specific contractor used will depend on the type of waste requiring disposal. All records are auditable and will be checked regularly.

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 (see Figure 11). All work will be carried out in strict accordance with The Control of Asbestos Regulations 2006. 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 via licensed contractor to approved disposal sites. Carrier's Licences and Environmental Permits for the waste management activities to be undertaken will be checked before any disposal occurs. Under the contract conditions the contractor will be required to meet the nationally set controls for disposal of the waste through approved landfill sites. The site will audit this regularly.

Figure 11: Example of Turbine Hall Asbestos removal

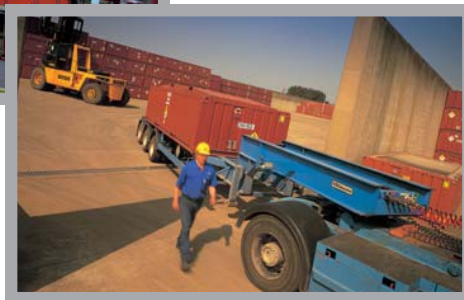


Figure 12: The National Low Level Waste Repository

Other Wastes

Non-radioactive waste materials have arisen throughout the operating life of Sizewell A. In general, the management of waste at Sizewell A will aim to minimise the need to use landfill by reducing waste volumes wherever possible by following the hierarchy of waste management (i.e. reduce, reuse, recycle). Sizewell A 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.

Scrap metal (e.g. steel and copper from wiring), plastic, Cardboard, paper, compostable material and glass will be sent to an appropriate contractor for recycling. If it is not practicable to reuse or recycle any scrap materials they will be disposed of via approved routes in accordance with the Duty of Care principles, primarily to landfill.

Non-radioactive effluent will be disposed of under the Environmental Permitting Regulations, Environmental Permit (formerly a discharge consent issued under the Water Resources Act 1991) via the site cooling water outfall to the North Sea. Discharges under this permit include cooling water, rain water and fully treated effluent from the A and B site sewage treatment plant.

Radioactive Discharges and Emissions during Care & Maintenance Preparations

Radioactive discharges to air and sea from Sizewell A during decommissioning will continue to be made in accordance with the permit granted by the Environment Agency under the provisions of the Environmental Permitting Regulations 2010 (Formerly an authorisation issued under the Radioactive Substances Act 1993). It is expected that annual gaseous and liquid discharges will reduce, although there may be some temporary peaks resulting from certain hazard reduction activities.

Environmental Performance

During the year the site has maintained accreditation to ISO 14001, with a surveillance and recertification audit having been undertaken.

The site target to reduce electricity and water usage compared to the usage in 2009/10 figures by 5% was easily met with reductions of 11.9 and 18.2% respectively.

Ongoing work on site to reduce the impact of our waste on the environment has led to a large reduction on the amount of waste sent to landfill. This is largely due to the compostable waste route that was put in place in the previous year. This has proven to be a successful initiative with segregation both in the site canteen and in the site offices.

Work to remove the sites cooling water pumps has continued with the successful removal of all four of the cooling water pumps, the majority of which went for recycling. In addition the Essential General Service Water pumps that were located in the same area have been removed and sent for recycling. This has allowed the site to seal the penetrations to the sea in this area allowing the remaining structures to be left empty and ready for infill at a future date.

Significant quantities of asbestos have been removed from the site following project work to remove the asbestos clad pipes from the external walls of the reactor building. This work is ongoing and is due to complete in 2011/12. In total 122 tonnes of asbestos was safely removed and disposed of by the site.

Work has been ongoing throughout the year on the installation of both electrical and control and instrumentation (C&I) overlays. Once completed this will enable the release of buildings that are no longer required for conventional demolition.

Work to support the Greater Gabbard Wind Farm project were completed in the last year and the areas of site affected have been re-instated.



Figure 13: Sizewell A from the south (Sizewell B in the background)



Magnox

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