



WYLFA NUCLEAR POWER STATION

ENVIRONMENTAL STATEMENT

NON TECHNICAL SUMMARY

**in Support of the Application to Decommission Wylfa Nuclear Power Station as
Required by Statutory Instrument 1999 No. 2892: Nuclear Reactors
(Environmental Impact Assessment for Decommissioning) Regulations 1999 (as
amended)**

Issue One

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WYFLA POWER STATION - ENVIRONMENTAL STATEMENT NON TECHNICAL SUMMARY

This document provides a non-technical summary of the Environmental Statement (ES) for the decommissioning of Wylfa Nuclear Power Station, which has been prepared in accordance with the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999.

The report is written in non technical language and is aimed at the general reader. Further information and full details are contained within Parts 1 and 2 of the Environmental Statement. All figures are collated in the Supplementary Drawings Document.

Introduction

Wylfa Nuclear Power Station (hereafter Wylfa) is located on the north coast of the Isle of Anglesey at Wylfa Head, Cemaes Bay (see Photograph 1 and Figure WYA/GEN/1). Magnox Electric Ltd (hereafter Magnox Electric) is the licensee of Wylfa under the Nuclear Installations Act 1965 (as amended). Magnox Electric is a subsidiary of Energy Solutions. The UK Government's Nuclear Decommissioning Authority (NDA) owns the site and Magnox Electric manages the site under contract to the NDA.

Photograph 1: View of Wylfa Nuclear Power Station and Surrounding Area



For any industrial site, there comes a point when the costs of continued operation start to outweigh the earning potential and the decision has to be made to close down the site and dismantle it. For this reason Wylfa, which was commissioned in 1971, is due to cease generating electricity on 31st December 2010¹. Following end of generation, subject to the receipt of all necessary consents, it is proposed to dismantle and remove all of the buildings, plant and equipment from the site. This process is known as ‘decommissioning’.

In the UK, the decommissioning of a nuclear power station requires the consent of the Health and Safety Executive (HSE). Consent to decommission may only be given by the HSE after the submission by the licensee of an application and environmental statement under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (SI 1999 No. 2892) (as amended) (hereafter EIADR99). Such an application is now being made by Magnox Electric for Wylfa. An environmental impact assessment (EIA) has been undertaken in support of this application. The assessment considers the potential environmental effects occurring as a result of the proposed decommissioning works. The environmental statement (ES) summarises the findings of the EIA and identifies the adverse or beneficial impacts of the decommissioning project and the measures that will be taken to avoid, reduce or offset those adverse impacts. This non-technical summary gives an overview of the information and environmental impact assessment (EIA) contained in the environmental statement.

The Nuclear Decommissioning Authority

The Formation and Role of the Nuclear Decommissioning Authority

In November 2001 the Government announced its intention to make radical changes to current arrangements for the clean up of the UK’s nuclear legacy and in line with this a White Paper was published in July 2002². This set out the proposals for the formation of the Nuclear Decommissioning Authority (NDA). The NDA was established by The Energy Act 2004, which received Royal Assent in July 2004, and the NDA became operational in April 2005.

Except in the case of those nuclear liabilities owned by British Energy, the NDA now owns and funds the clean-up of all UK civil nuclear liabilities, including all reactor sites licensed to Magnox Electric Ltd. The NDA also provides the strategic direction for decommissioning and radioactive waste management on those sites. In brief, the NDA’s mission is to deliver a world class programme of safe, cost effective, accelerated and environmentally responsible decommissioning of the UK’s civil nuclear legacy, in an open and transparent manner with due regard to the socio-economic impacts on the affected communities.

¹ 2010 is the current date when Wylfa is planned to cease generation, however a business case is being developed for a potential extension from the current closure date of 2010.

² Department of Trade and Industry (2002) Managing the Nuclear Legacy: A Strategy for Action, Cm5552.

Strategy Development

One of the main tasks of the NDA will be to put in place an overall strategy for dealing with the nuclear legacy safely, securely and in accordance with national and international environmental requirements. The NDA published its approved strategy on 31 March 2006.

The NDA has already ensured that comprehensive long term plans for the operation and/or decommissioning of sites exist for all of the sites for which it is responsible. These plans are called Lifetime Plans (LTPs); they include a description of the scope of the work, the timescales for completing the work and the costs up until completion of Final Site Clearance. The NDA requires sites Lifetime Plans to be based around optimised integrated waste management strategies produced in line with its specification for such plans. An integrated waste strategy (IWS) is a document which describes how a site optimises its approach to waste management in an integrated way. It includes information on waste streams and discharges expected from current and future operations as well as any actions required to improve the site's approach to waste management. Wylfa's IWS and LTP are updated annually and submitted to the NDA by the site contractor. The LTP comprises a much more detailed description of scope, timescales and costs for the first three years of the LTP programme than it does for the later years of the LTP programme.

The environmental impact assessment presented in this overview is based upon the plans that are presently included in the site's Lifetime Plan. Any change to the proposed decommissioning project in the future will be managed in an open and transparent manner, allowing stakeholder engagement and consultation through the necessary permissions that are required and through ongoing stakeholder engagement activities undertaken by the site. Changes to strategy could arise in relation to a number of matters including, but not necessarily limited to, management of wastes, re-use of existing buildings instead of new build, the timing of Final Site Clearance and transport arrangements.

There is, though, a process within EIADR99 which allows for changes to a decommissioning project to be made after consent has been received. Depending on the nature of the change, this could require a new EIA to be carried out and a repeat public consultation before the HSE could grant consent for the new or amended project.

The Wylfa Site Today

The NDA land holding at Wylfa is approximately 113 hectares (ha), with the nuclear licensed site covering approximately 21 hectares and the remaining land being used primarily as leased farmland.

The nuclear licensed site can be considered in two parts:

- The area within the Inner Security Barrier (ISB); and
- The conventional area.

Other than these two general areas, outside of the outer security fence are: the jetty, the information centre, simulator training building, learning and development centre, reception centre, contractors car park, the off-site emergency control centre, emergency equipment storage compound and the 132 kilovolt (kV) and 400 kV electricity substations. These substations provide the electrical connection to the power station site and are owned by National Grid Company. They are located in close proximity to the outer security fence, on land owned by NDA and leased to National Grid Company; the substations are not part of the decommissioning project.

The area within the ISB includes a number of buildings with internal plant and structures some of which are either radioactive themselves or which are contaminated with radioactive substances. The main buildings and plant within the ISB are:

- the reactor building;
- the three primary dry storage cells (DSCs) and waste storage vaults;
- the two secondary DSCs;
- the primary and diverse discharge fuel routes; and
- the active effluent treatment plant (AETP) (located within the reactor building).

The reactor building contains two reactors housed in a combined single building, which are of the gas cooled, graphite moderated ‘Magnox’ type³. Each reactor is enclosed in a concrete pressure vessel lined with mild steel. The concrete pressure vessel also acts as the biological shield, which protects workers from the effects of the direct radiation from the reactors themselves. In addition to the fuel (when generating), also contained within the pressure vessel are the 4 boilers, graphite, control equipment (including control rods and associated mechanisms) and equipment used for monitoring (e.g. temperatures, pressures).

Each reactor pressure vessel forms part of the ‘primary circuit’ comprising the pressure vessel and the boilers (heat exchangers). Each reactor has four boilers which are used for heat removal and steam production. Four electrical driven gas circulators on each reactor provide forced CO₂ gas circulation, in order to transfer the heat generated within the reactors to the boilers.

A significant difference between Wylfa power station and other Magnox reactor power stations is the provision of dry storage cells for spent fuel, which eliminates the need for fuel ponds and associated waste streams. There are five dry storage cells (DSCs). The three primary DSCs (1, 2 and 3) can hold about 6500 fuel elements each and are cooled using carbon dioxide. The secondary DSCs (4 and 5) are a later addition and are a different design; being air cooled, they can hold about 29000 fuel elements each. The diverse discharge fuel route allows disposal of fuel directly from DSCs 4 and 5.

The conventional area (outside the ISB but within the outer security fence) contains mostly non-radioactive plant and buildings. The main plant and buildings in this area are as follows:

³ The term ‘Magnox’ derives from the magnesium alloy cladding material [MAGnesium Non-OXidising alloy] that surrounds the natural uranium fuel within each individual fuel element.

- Turbine hall;
- Cooling water pumphouse;
- Water treatment plant;
- Radioactive waste incinerator⁴;
- Carbon dioxide storage tanks;
- Carbon dioxide plant (including vaporisation facilities);
- Gas turbine plant;
- Mechanical workshops, stores and engineering facilities; and
- Administration block and offices.

Of these, the most substantial structure is the turbine hall. Within the turbine hall are four turbo-generator units each of which, when the station is generating, receives incoming steam and rotates the internal mechanism of the alternator (electricity generating) units. Beneath these turbo-generator units are the condensing units, founded on the floor of the turbine hall. Through these condensing units is passed cooling water (drawn from the Irish Sea) that is used to complete the conversion of steam to water before it is transferred back to the boilers.

Further detail on the layout, plant and equipment on the site can be found in Part One, Section 4 of the main statement.

The Site Surroundings Today

The environmental impacts of the decommissioning project have been considered in the context of the existing site surroundings. The existing site surroundings are described in Part One, Section 4 of the main statement and in the individual technical sections of Part Two. A summary of the area surrounding Wylfa is presented in Box 1 below.

Box 1: The Area Surrounding Wylfa	
Transport Infrastructure	
<i>Main access route:</i>	<ul style="list-style-type: none"> • The main vehicular route to and from Wylfa power station site is the A5025 which connects the site to the A5 at Valley and the A55, approximately 20km to the south. To the east, the A5025 connects the power station to Cemaes Bay and a number of other settlements on the northern and eastern coast of Anglesey. In both directions this route is predominantly rural in nature but also runs via a number of settlements.
Surrounding Landscape	
<i>Landscape features:</i>	<ul style="list-style-type: none"> • Essentially rocky shoreline to the north west. • Wylfa Head to the north east, a level outcrop with craggy shoreline. • Area of scrub and woodland to the south east. • Area of flat small scale agricultural fields surrounding the site and vegetated area to the south. • Close to the coast the land generally comprises rough grazing with exposed rock and gorse thickets. Farther inland the land comprises gently undulating, low lying farmland and isolated woodland.

⁴ Although the active waste incinerator is within the conventional area it is a radiation controlled area (RCA)

Box 1: The Area Surrounding Wylfa

Air Quality

Air Quality:

- There are currently no Air Quality Management Areas (AQMAs) on the Isle of Anglesey and none pending.

Water Courses

Main surface water feature:

- The main surface water feature in the area with the potential to be directly affected by the site is the coastal water of the Irish Sea. It is from here that water is abstracted for use on the site prior to being discharged back to the sea.
- There are no significant surface fresh water courses at or within the immediate area to the Wylfa site and as such there are no water quality designations.
- The nearest major fresh water course is the Afon Wygyr which drains land to the east of the power station and flows into the Irish Sea at Cemaes Bay some 2km from the power station.
- There is a small intermittent stream to the south of the site, which draws on shallow water within the superficial deposits. There are also a number of small springs and drainage ditches feeding Tre'r Gof SSSI located to the north-east of the station.

Geology and Hydrogeology

Underlying bedrock:

- The underlying bedrock is New Harbour Group of the Pre-Cambrian Mona Complex.
- Wylfa Head and part of the headland to the north-west of the site comprise rocks of the Gwna Group.
- Within the New Harbour Group there are outcrops of extrusive igneous rock, with one such outcrop cutting across the site to the south of the turbine hall and reactor building.

Major Aquifers:

- There are no significant aquifers beneath the site.

Minor Aquifers:

- The New Harbour Group is classified as a minor aquifer as it may contain water where it is fractured, weathered or broken.

Settlements

Nearest Settlements:

- Tregele 1km south-west.
- Cemaes 2km south-east.
- Amlwch 9km east.
- Holyhead (nearest town with over 10,000 inhabitants) 27km south-west.

Designated Sites of Conservation

Designated sites of nature conservation interest:

- Tre'r Gof SSSI.
- Cemlyn Bay SSSI.
- Ynys Feurig, Cemlyn Bay and The Skerries Special Protection Area (SPA).
- Cemlyn Bay Special Area of Conservation (SAC).

Designated geological sites of

- There are no designated geological sites of conservation value on or adjacent to the power station.

Box 1: The Area Surrounding Wylfa	
<i>conservation value:</i>	<ul style="list-style-type: none"> • Henborth Site of Special Scientific Interest (gSSSI);
Archaeology and Cultural Heritage	
<i>Scheduled Monuments:</i>	<ul style="list-style-type: none"> • There are no Scheduled Ancient Monuments on the power station site. The nearest Scheduled Ancient Monument is a triangular arrangement of Early Bronze age standing stones 2.5km south-west of the site.
<i>Listed Buildings:</i>	<ul style="list-style-type: none"> • There are no Listed Buildings within the study area. There are three Listed Buildings 1km south-west of the power station.
<i>Historic Parks and Gardens:</i>	<ul style="list-style-type: none"> • Cestyll Gardens lies within the NDA landholding and is included in the Cadw/ICOMOS Register of Landscapes, Parks and Gardens of Special Historic Interest in Wales.
<i>Historic Battlefields:</i>	<ul style="list-style-type: none"> • There are no registered historic battlefields within the study area.

Decommissioning Overview

It is proposed that the current generic decommissioning strategy for Magnox Electric's reactor sites is applied to Wylfa and described in the site's Lifetime Plan. This comprises three main stages. Over a period of about 10 years all the machinery and buildings except the reactor building will be dismantled and removed. During this time, referred to as '**Care and Maintenance Preparations**', the reactor building will be prepared for an extended period of safe storage, known as '**Care and Maintenance**', until the radioactivity levels inside the reactors will be low enough to simplify their final dismantling. The period of storage proposed ends between 85 to 105 years after the end of electricity generation. Following this period, over about 8 years, the reactors and the reactor building will be removed and the site finally cleared; this is known as '**Final Site Clearance**'.

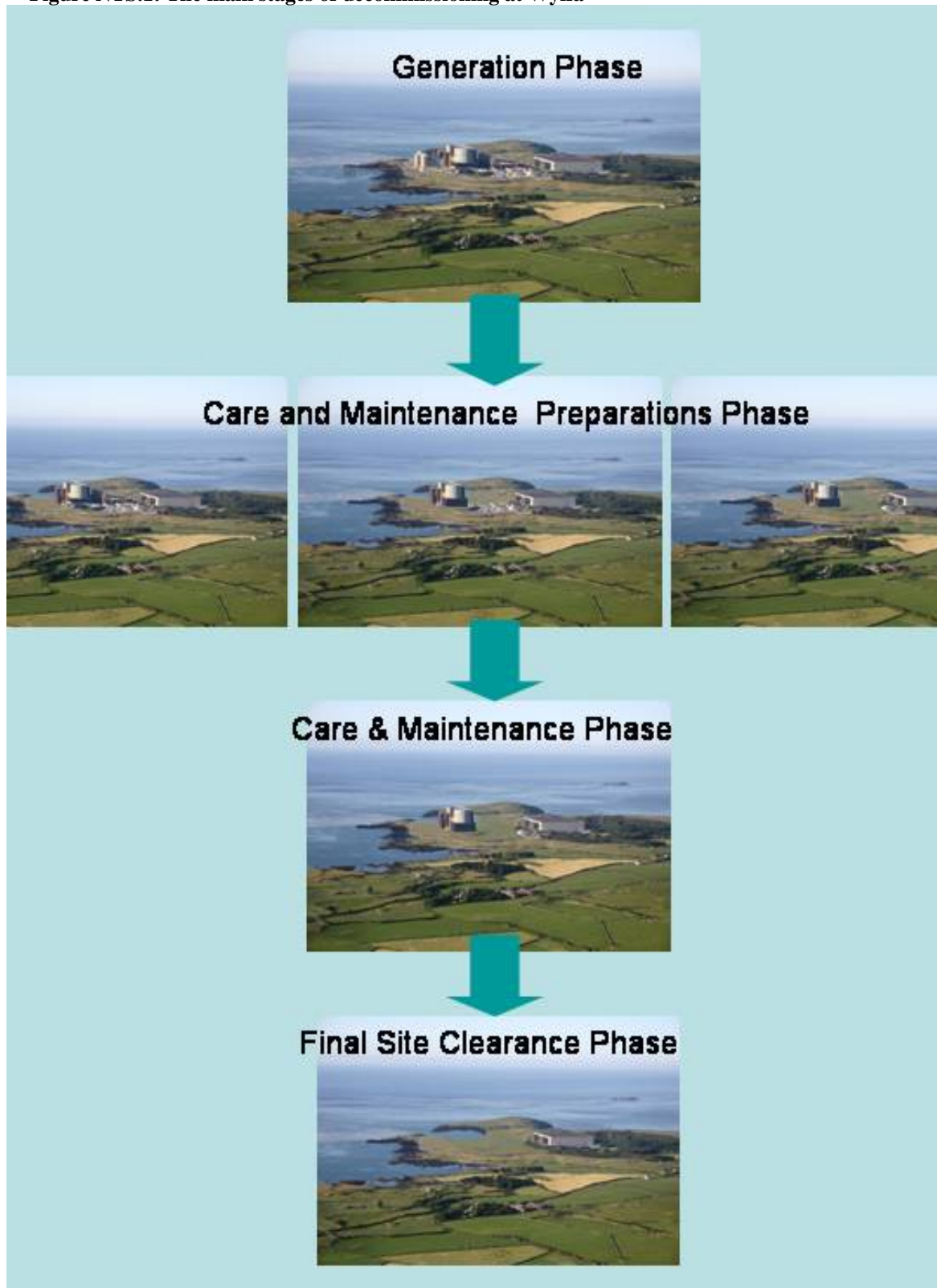
Box 2 provides a summary of the three main decommissioning stages, Figure NTS.1 indicates these stages for Wylfa pictorially. Extensive studies undertaken by Magnox Electric Ltd and its predecessors indicate that it is possible to complete decommissioning on the proposed timescales, resulting in significant environmental, radiological, safety, technical and financial benefits.

Further information on the decommissioning and waste management strategies, in particular in relation to Government policies, can be found in Part One, Section 5 of the main statement. Reasons for the selection of strategies for the various aspects of the proposals can be found in Part One, Section 7.

Box 2: Summary of the Main Stages of Decommissioning

- **Care and Maintenance Preparations** is the first stage and is estimated to take approximately 10 years to complete. During this stage all of the radioactive and non-radioactive plant and buildings on the site other than the reactor building (and most of its contents) will be dismantled and cleared.
- **Care and Maintenance** is the second stage which, it is proposed, will last for a number of decades, during which no significant dismantling will be carried out. During this time the site will continue to be managed, monitored and maintained in a safe state.
- **Final Site Clearance** is the last stage and 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 standards.

Figure NTS.1: The main stages of decommissioning at Wylfa



The Decommissioning Proposals in Further Detail

Decommissioning of Wylfa will involve the careful and systematic removal of all plant, equipment and buildings from the site including the nuclear reactors and all wastes. As explained above, it is proposed to do this in three distinct phases. Each phase is now described in further detail.

More detailed information on carrying out the decommissioning and waste management works can be found in Part One, Section 6 of the main statement. As explained there, there is greater uncertainty surrounding the exact works that will be carried out during Final Site Clearance than there is for the earlier phases of decommissioning. Such uncertainties for Final Site Clearance include the date that work commences, programme, the location on site of new facilities and the composition of radioactive discharges.

Care and Maintenance Preparations

The first stage of decommissioning is aimed at placing the site into a state where, although monitoring and maintenance will still be needed, human intervention is minimised. All significant radioactive and non-radioactive buildings and machinery, except the reactor building, will be dismantled. Some partial dismantling and removal of machinery in and around the reactor building will take place but the large items such as the reactors, the concrete bioshields, boilers and the primary DSCs will not be removed until Final Site Clearance.

The exterior of the reactor building will be modified to ensure that the building's contents remains safe, secure and weatherproof throughout the Care and Maintenance period; this will include the removal of glass windows and panels from around the reactor building and replacing them with cladding similar to that found elsewhere on the building. In addition any penetrations in to the reactor building will be sealed and clad. A new gatehouse will be constructed to provide a new controlled entry into the area.

The turbine hall, cooling water pumphouse, offices, workshops, stores and radioactive workshops will all be demolished; a plan showing the structures to be demolished is shown in Figure WYA/GEN/3. Uncontaminated demolition rubble generated on site will be used for the infill of deep basements. All roads and hardstandings (other than the road that runs around the reactor building and new radioactive waste storage building) will be removed. Temporary contractors' compounds and plant/equipment and materials storage areas will also be created as may one or more temporary spoil grounds. Some modifications to site services to meet the project requirements will be necessary. The existing mains water supplies already in place will be sufficient for Care and Maintenance Preparations purposes; however modifications will be made to the towns water / potable water system. The existing foul drains / sewage treatment arrangement will continue to apply. Towards the end of Care and Maintenance Preparations the existing pipework associated with the foul drains will be left in situ.

Intermediate level radioactive waste existing on site will be packaged and placed in a new storage building designed and built for this purpose. The location of this building is shown on Figure WYA/GEN/4. When they are no longer needed, the waste

retrieval and processing facilities will be decommissioned but the radioactive waste storage building will remain on site until Final Site Clearance. Further information on wastes is given below.

At the end of Care and Maintenance Preparations the only significant structures remaining on the site will be the modified reactor building and the radioactive waste storage building.

Non-Radioactive Wastes

During the decommissioning works, inert building debris will arise. Wherever possible this material will be used to fill in below ground voids. There will also be large quantities of non-radioactive scrap metal, glass and asbestos. All of this material will be removed from the site and, if practicable, reused or recycled. If it is not possible to reuse or recycle this waste then it will be sent to landfill or licensed disposal sites by the appropriate licensed carrier.

Radioactive Wastes

Radioactive wastes can be classified according to how radioactive they are. Types of radioactive wastes include **Low Level Wastes (LLW)** and **Intermediate Level Wastes (ILW)**. Both types of wastes have arisen at Wylfa since generation began and both will arise during decommissioning.

Radioactive waste can also be classified according to its origin: the types relevant to the decommissioning of Wylfa are ‘decommissioning’ wastes and ‘operational’ wastes. **Decommissioning wastes** are created as a result of the dismantling of radioactive plant, equipment and structures. **Operational wastes** are created from more routine day to day operations: they have arisen since generation began and will continue to arise during decommissioning. Further information on operational wastes can be found in Part One, Section 4 of the main statement.

At Wylfa, both decommissioning and operational LLW will be created during Care and Maintenance Preparations. No decommissioning ILW is expected to arise during this period, though operational ILW is already present on the site and will continue to be generated until shortly after 31 December 2010.

During Care and Maintenance Preparations all LLW will continue to be sent to the Low Level Waste Repository near the village of Drigg in Cumbria as soon as practicable after it arises. However, there is no disposal route currently available for any ILW, including the operational ILW already present on site.

It is Government policy that the UK will have a national disposal site (or repository) for, among other things, operational ILW from nuclear power station sites. However, as it will take time to identify an acceptable site, draw up plans, obtain planning permission and construct the repository, the operational ILW generated at Wylfa is likely to remain on site for many years. For this reason a new **radioactive waste storage building** is to be built on site to store the majority of the operational ILW (until a repository becomes available). The storage building will be designed, constructed and maintained to appropriate standards, regulated by the HSE. Prior to

being placed in this store, operational ILW will be encapsulated in cement in steel packages. All waste processing and packaging will be carried out to appropriate standards.

Care and Maintenance

Once all the preparations are complete, Wylfa will then move into Care and Maintenance. During this phase natural radioactive decay will allow the level of radioactivity inside the reactors to fall. It is proposed that this stage will last until 85 to 105 years after final shutdown. Photograph 2 shows an artists impression of the reactor building and radioactive waste storage building during Care and Maintenance. The final appearance of the radioactive storage building will be determined through a planning application under the Town and Country Planning Act 1990.

Photograph 2: An artist's impression of the reactor building and radioactive waste storage building during Care and Maintenance



At some time during Care and Maintenance it is expected that a national waste repository will become available. At this time the packaged operational ILW will be removed from the radioactive waste storage building and transferred to the national disposal site. The store itself will remain on site until Final Site Clearance. The only other work that may be required on site, other than routine monitoring and surveillance, during this phase will be the refurbishment or replacement of the cladding on the reactor building as necessary.

Wylfa will continue to be a nuclear licensed site and will continue to be subject to regulatory control in accordance with legislation. Regular visits will be made to the site by trained and competent personnel to confirm the continuing security and safety of the site and to perform any necessary maintenance and monitoring work. The inspection regime has yet to be finalised but would include external inspection that will identify any damage to the reactor building and radioactive waste storage building fabric, such as loss of cladding. A second re-clad of the reactor building may be required during Care and Maintenance period, if the cladding material is found to be in need of repair.

The layout of the site at the end of Care and Maintenance Preparations and therefore during Care and Maintenance is shown in Figure WYA/GEN/4.

Final Site Clearance

All remaining facilities and structures associated with the power station will now be cleared from the site. This will include the reactors, the radioactive waste storage building, boilers and all radioactive and hazardous wastes. There will be a need to erect a number of temporary buildings on the site to facilitate this clearance work, all of which will be removed by the end of Final Site Clearance. One of the temporary facilities required will be a new waste management facility. The function of this facility will be to receive wastes arising from the reactor, boiler, primary circuit components and reactor building dismantling; to sort the wastes as required; to carry out any further size reduction of wastes and to load the wastes into boxes suitable for final disposal. Other facilities and work required during Final Site Clearance may include the following:

- upgrading/modification of installed security systems and site access control;
- installation and/or upgrade of power, telecommunications, water, drainage and sewage systems to the site to support the enlarged workforce and activities to be carried out during Final Site Clearance⁵;
- refurbishment/extension of site roads and car parks;
- construction of offices and welfare facilities;
- construction of workshops, stores, laboratories etc.; and
- construction of change facilities and controlled access points.

Once building demolition nears completion, the removal of site infrastructure (*i.e.* roads, car parks, hardstandings, fences, water mains *etc.*) will commence. Monitoring will be used to confirm that no radiological hazard exists on the site (as defined by the regulatory regime in force at that time), any contaminated land having been remediated. The intention is that the site is de-licensed under the Nuclear Installations Act (1965, as amended); the site will then be available for alternative use.

How Will the Work be Managed?

Information on the management of the site and work during all phases of decommissioning can be found in Part One, Section 6 of the main statement.

Hours of Work

Current normal working hours are between 07:30 and 17:30 hours, Monday to Friday. Most decommissioning work on site will also be undertaken during these hours 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

⁵ Given the number of personnel likely to be on-site for 8 years, it is assumed that a foul drains and sewage treatment system similar to that currently in place will be re-instated for this phase.

retrieval of operational ILW and for subsequent waste packaging operations but these operations will take place within buildings only.

Numbers of Workers

The current power station workforce comprises of 650 permanent staff and 100 subcontractors giving a total of 750 employees. Numbers of workers will fluctuate over the project but the maximum number of workers on site will be about 607 during Care and Maintenance Preparations, with no permanent presence expected for the majority of Care and Maintenance (with the exception of routine maintenance and security personnel) and a maximum of 450 workers in Final Site Clearance.

HGV Movements

There is likely to be a temporary increase in the number of HGV movements to and from the site as a result of the proposed Care and Maintenance Preparations activities. Excluding the continued routine deliveries of consumables, peak HGV movements associated with this phase are estimated to reach no more than 35 or so vehicles travelling to and away from the site on a week day. The movement of HGVs over weekends is expected to be very limited.

During Care and Maintenance there will be very little traffic travelling to and from Wylfa. The only regular traffic movements will relate to security or inspections personnel, with visits for maintenance purposes as and when required.

Again excluding routine deliveries of consumables, HGVs movements associated with Wylfa during Final Site Clearance are estimated to reach an average of 50 vehicles travelling to and from the site on a week day. Once the Final Site Clearance phase is complete, there will be no traffic travelling to or from Wylfa power station.

Land Use

Almost all of the works will be carried out within the current outer site fence. The main exception to this is the work associated with the jetty, offshore seawater intake structures and cooling water (CW) outfall complex. Suitable notices to mariners will be issued to the Admiralty highlighting any navigational issues, including the loss of the navigation lights currently on the structures. Any vessels involved in offshore work will be marked and appropriately lit as agreed with the relevant bodies.

Radioactive Discharges

During decommissioning, radioactive discharges to air and to the sea from Wylfa will continue. It is expected that gaseous and liquid discharges will be reduced compared with when the station was operational. However, there may be peaks resulting from certain activities. All discharges will be made in accordance with authorisations granted by the Environment Agency (EA) under the provisions of the Radioactive Substances Act (1993). A summarised description of the discharges expected to arise during decommissioning is given in Box 3.

Where necessary, buildings and work areas with the potential for airborne radioactive contamination will have forced ventilation with exhaust air passing through filters as appropriate. The radioactive waste storage building will be ventilated by passive means - air in this building is expected to contain only traces of tritium (the radioactive form of hydrogen). Discharges, aerial or liquid, will be monitored and reported to the Environment Agency as required under the terms of the discharge authorisation.

Box 3: Radioactive Discharges

Care and Maintenance Preparations

- The main sources of radioactive gaseous discharges will be from the reactor vessels which had held the fuel in the reactors and from the ventilation of contaminated areas.
- Radioactive liquid effluent arisings will result from wet cutting operations, decontamination operations, the use of showers and the operation of laundries. All waste water arising on site that has the potential to be radioactively contaminated will be treated to minimise its radioactive content before being discharged to the Irish Sea.

Care and Maintenance

- There will be a small gaseous discharge of radioactivity from the reactor vessels and there will also be traces of tritium (the radioactive form of hydrogen) being released to the atmosphere from the radioactive waste storage building. Overall the atmospheric discharges from the site will be much smaller than when the reactors were operational, much lower than during Care and Maintenance Preparations and much lower than the current authorised limits.
- Under normal circumstances no liquid radioactive discharges are expected.

Final Site Clearance

- Radioactive airborne emissions will result mainly from cutting processes to dismantle the reactor.
- Radioactive liquid wastes will result from water drenching of cutting activities.

Further information on radioactive discharges from Wylfa can be found in Part One, Section 8 of the main statement.

Safety

As now, the safety of the public and the workforce will be a priority during decommissioning. Safety, both nuclear and conventional, will be regulated by the HSE in consultation with the EA. Wylfa will continue to be licensed under the Nuclear Installations Act (1965, amended) and therefore will still require a Safety Case, this being a document or set of documents that provides for the safe operation of plant and equipment or the carrying out of certain activities. As the decommissioning of Wylfa continues, the Safety Case will be updated progressively.

Further information on the safety case system, as well as emergency arrangements, can be found in Part One, Section 8 of the main statement.

Security

Security arrangements that comply with Government requirements are in force at Wylfa. These are kept under review by Magnox Electric and its regulators to ensure their continuing effectiveness. As the detailed security arrangements at civil nuclear sites are a sensitive matter, in accordance with Government policy details are not included in this submission.

Security at Wylfa will remain on shift 24 hours per day, seven days per week during Care and Maintenance Preparations and Final Site Clearance. For the Care and Maintenance phase all the buildings remaining on the Wylfa site will be designed to be resistant to unauthorised entry and will have intruder detection systems. Full time on-site security personnel may therefore not be required during this phase, subject to OCNS approval.

Alternatives

Information on the main decommissioning and waste management alternatives considered by Magnox Electric and the reasons for the choices made can be found in Part One, Section 7 of the main statement.

Decommissioning Strategy Selection

The preferred decommissioning strategy of deferred site clearance was identified by considering a comprehensive range of potential options against safety, environmental, technical, financial, political and regulatory factors. The environmental issues considered in the assessment were:

- land requirement: this related to the availability of land for other use or re-use;
- disturbances: this included disturbance to the local population and included construction, visual impact, noise and transport; and
- waste minimisation: the advantage of minimising waste volumes.

The selection of a preferred decommissioning strategy for Wylfa has evolved from extensive studies and assessments undertaken over many years. The results of the studies which have been undertaken confirmed that nuclear power stations could be fully decommissioned using available technology. However there were considered to be technical, radiological and financial benefits to be gained by deferring the complete dismantling of the reactors by about 100 years. In 1998 a detailed review of decommissioning strategy options was completed by Magnox Electric. The options for decommissioning that were considered realistic fall into three general categories:

- early site clearance;
- in situ decommissioning; and
- deferred site clearance.

These three decommissioning options are summarised in Box 4:

Box 4: Decommissioning Options	
Decommissioning Options	Description
Early site clearance	Early site clearance involves the early dismantling of all plant and structures on site. Although this option is technically feasible, this option has been rejected for the following reasons: (1) higher radioactivity and ambient dose rates; (2) larger quantity of radioactive waste; (3) complex, remotely operated and maintained machinery; (4) no disposal route for the decommissioning wastes generated and (5) cost.
<i>In Situ</i> decommissioning	This option retains some plant and structures on site permanently. At a later stage (which may be decades after final reactor shutdown) the main buildings containing radioactive materials <i>e.g.</i> the reactors, are in-filled with cement-like grout or other material to eliminate any voids, prior to being buried under an engineered mound. Although this option uses relatively simple engineering and there would be low volumes of packaged waste for disposal off site, this option has been rejected for the following reasons: (1) the site would not be available for unrestricted reuse; (2) the site may not be de-licensed; (3) long-term risk to the general public may not be straightforward to quantify, and (4) concern to local people.
Deferred site clearance	This defers the final reactor dismantling. It is the preferred option and includes the conversion of the retained reactor building to safe, secure and weatherproof structures allowing natural radioactive decay to lower levels.

The preferred decommissioning option is deferred site clearance. The main reasons for choosing deferred site clearance were:

- Reduction of radiation dose rates;
- Dismantling by simpler methods;
- Reduced consequences of any faults;
- Lower radioactive waste quantities; and
- Lower costs.

Site-specific Decommissioning Activities

There are a number of site-specific decommissioning activities where alternatives exist; some of these are detailed below.

Reactor Building and Contents

There are two specific aspects of reactor building appearance during Care and Maintenance to which consideration has been given: building height and cladding.

For a reactor building that is being ‘safestored’ for an extended period of Care and Maintenance there are two options which can be considered with regards to height of the reactor building:

- To leave the reactor building at its full height for that period; or
- To first reduce the height of the building, with the objective of reducing the visual impact of the reactor building when viewed from certain locations.

For the purposes of this environmental statement it has been assessed that the reactor building will be ‘safestored’ at its present height.

Likewise, the question could be asked whether the profile of the reactor building could be reduced in size by removal of the boilers, gas ducts and other primary cooling circuit components. The boilers etc. were removed from Berkeley Power Station in Gloucestershire and the same is proposed for Calder Hall in Cumbria and Chapelcross in Dumfriesshire. In all three of these cases the work has been done or is proposed because the boilers stood or stand free from the main reactor buildings and they will remain on site, laid-down on the ground, for the duration of Care and Maintenance.

The same procedure will not, however, be able to be carried out for Wylfa as the design of Wylfa’s reactors is different from these other power stations. Since the boilers at Wylfa are situated within the concrete pressure vessels they will not be removed until Final Site Clearance. As such, they will be ‘safestored’ within the concrete pressure vessel until this final phase of decommissioning.

There are two options in respect of the long term external cladding of any reactor building:

- To carry out some initial maintenance / repair, (i.e. during Care and Maintenance Preparations) with further work as necessary thereafter; or
- Complete re-cladding during Care and Maintenance Preparations with the aim of minimising long term maintenance requirements.

Complete re-cladding of the reactor building towards the end of Care and Maintenance Preparations is the preferred option, as the existing cladding for the reactor buildings is not of a standard such that it can adequately protect the main structure of the reactor buildings and internal plant from the weather for the whole of the proposed Care and Maintenance period, at least not without regular and extensive re-cladding work. To adopt a relatively high maintenance approach by retaining the existing cladding would be against one of the main principles behind the concept of Care and Maintenance, which is to have a site that requires minimal human intervention over a period of some decades.

Radioactive Waste

There are various types of operational ILW that arise on nuclear power station sites during electricity generation, defuelling and the early part of decommissioning. Two main options have been considered (on a waste type basis) for the management of operational ILW. These are:

- storage of ILW in raw form until final repository requirements are known; or
- encapsulate/solidify the wastes immediately following retrieval.

Encapsulation/solidification is the proposed option for both solid and wet ILW that are retrieved, this being the established and proven approach for such wastes. However, this is a matter under review and a number of alternative options are being considered.

The chosen strategy for the various types of operational ILW will produce packages requiring storage on the site. There are three options for the storage of packaged ILW. These are:

- a new purpose-built storage building;
- storage within existing buildings specifically converted for that purpose or
- storage within cast iron containers (so called mini-stores)

A new purpose-built storage building is the proposed option at Wylfa; this is because such a building can, more readily than existing buildings, be designed to accommodate as many packages as necessary and can more readily achieve modern standards. However, storage of packages in a location within an existing building, specifically within the reactor building, is under consideration. Currently Mini-Stores are not licensed within the UK. Although consent for this approach is not presently being sought, should licence be granted for the use of these stores, Magnox Electric may wish to change its proposals and adopt this option. If it is decided to implement the ILW mini-stores option it will be subject to consideration under Regulation 13 of EIADR99.

Though studies are being carried out for Wylfa (and other sites) that consider a wide range of possible options, two main options have been considered for the disposal of decommissioning low level waste (LLW) generated during Care and Maintenance Preparations:

- Immediate disposal of all LLW to the repository near Drigg in Cumbria; and
- Disposal of low active decommissioning LLW within a new, engineered on-site disposal facility and immediate disposal of more active LLW to the repository near Drigg.

Currently all LLW is disposed of to the repository near Drigg and this is what is presently proposed under EIADR99 for Wylfa. However, at time of writing Magnox Electric has not ruled out the on-site disposal of low active decommissioning LLW as part of its proposals for Wylfa, though consent for it under EIADR99 is not currently sought, and the environmental impact assessment presented in this environmental statement is based upon the plans that are currently included in the site's long term plans (Lifetime Plans). Any change to the proposed decommissioning project in the future will be managed in an open and transparent manner, allowing stakeholder engagement and consultation through the necessary permissions that are required and through ongoing stakeholder engagement activities undertaken by the site.

Transport

Magnox Electric has also considered the use of road, rail and water transport for the transport of wastes and materials associated with decommissioning. The basis of the environmental impact assessment is transport of wastes and materials by road only.

Whilst materials and supplies would be sourced locally wherever practicable, consideration is being given to utilising the cooling water pumphouse jetty as a dock and transporting wastes for recycling or bulky and indivisible loads by water to the

nearby port of Holyhead. However, large loads are unlikely to arise during the decommissioning work apart from the transformers.

Offshore structures

Two options for the offshore structures that have been considered are to remove them completely or to leave them as they are. Retaining the structures is not considered to be safe in the long term and, at the very least, would require substantial and ongoing maintenance, therefore Magnox Electric prefers and is proposing the early removal of these structures.

Contractor Areas and Car Parking

Several locations around the Wylfa site have been considered for the provision of temporary contractor areas consisting of car parks and equipment lay down areas during Care and Maintenance Preparations and Final Site Clearance. A total of 9 possible areas were identified following a site walk over survey (confined to land under NDA ownership), of which the following 6 locations have been chosen and assessed in Section 7 of the main statement as preferred options for contractor areas and car parking due to their proximity to site and their accessibility:

- area of existing hard standing and grassland in the north west corner of the site;
- area of existing hard standing (contractors overflow car park) to the south of the CW pump house and includes an area of coastal grassland;
- football pitch and rough grassland south of the power station adjacent to the site access road;
- contractors' car park and rough grassland to the south of the site;
- lower car park (existing area of hardstanding); and
- upper car park (existing area of hardstanding and grassland) adjacent to the 132KV switch house.

Other locations such as the agricultural grassland to the south and north-east of the site and an area of conifer plantation between the 400KV switch house and the information centre were rejected on grounds of high ecological importance, the potential for environmental impacts and distance being too far from the site.

Site End States

Whilst the end state for the Wylfa site is to de-licence the site in order to make it available for alternative use, the NDA is currently reviewing the declared End States for all 20 sites for which it is responsible. This review aims to determine whether alternative options, such as potential redevelopment of a site, may provide a quicker and more cost-effective solution to site clearance and, if so, which possible future uses of the site may be acceptable to stakeholders.

An initial round of consultation has been undertaken at Wylfa to determine possible end uses for the site that may be acceptable to local stakeholders. This identified that future power production, industrial or commercial use, or allowing the site to return to a natural state, were the preferred end uses. A subsequent round of consultation is

currently being undertaken to assess the End State requirements necessary to meet these possible end uses.

On completion of the site reviews, the NDA will go through a process to reconcile proposed End States with Government Policy. Following subsequent national consultation, and subject to government approval, the revised End States will then be incorporated into the sites' LTPs. The current NDA objective is to complete this process by the end of December 2008. However, it is anticipated that any changes to the site's agreed End State would not be incorporated until the 2010 LTP submission.

The Regulation of Decommissioning

In addition to the usual regulation of industrial and other sites by local authorities, the decommissioning of nuclear power stations in England and Wales is overseen by three other statutory regulators: the Nuclear Installations Inspectorate (NII), the Environment Agency (EA), and the Office for Civil Nuclear Security (OCNS). In broad terms, the NII, which is part of the HSE's Nuclear Safety Directorate, is concerned with safety (and, of course, the environment through the EIADR99 process) and the EA is concerned with environmental issues. However, the roles are complementary and require both bodies to work together to deal with issues which have both safety and environmental implications. OCNS regulates all security matters.

The decommissioning of Wylfa will be controlled under various regulations and consents in addition to the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) (Amendment) Regulations 2006. A number of these regulations and consents are shown in Box 5.

Box 5: List of Legislative Regulations and Regimes Applicable to Decommissioning	
The Health and Safety at Work <i>etc.</i> Act 1974	This Act makes provision for securing the health, safety and welfare of persons at work.
The Control of Asbestos Regulations 2006	These require those in control of non-domestic premises to take certain measures to control the risks associated with asbestos.
The Control of Noise at Work Regulations 2005	These place duties on employers to eliminate or reduce any risk in respect of exposure of workers to noise;
The Regulatory Reform (Fire Safety) Order 2005	This is the primary fire safety legislation; it provides a risk-based approach to fire safety and affects employers and those who are responsible for non-domestic, industrial premises.
Article 37 of the Euratom Treaty.	This requires the UK Government to make a submission to the EC about disposal or discharge of radioactive waste or effluent.
Nuclear Installations Act 1965 (as amended).	This Act is the primary means by which all matters of nuclear safety on licensed sites such as Wylfa are regulated by a licence granted by the HSE.
Radiation (Emergency Preparedness and Public Information) Regulations 2001.	These require there to be an emergency plan for the purpose of restricting radiation exposure in the event of any reasonably foreseeable radiation emergencies, and also requires related emergency plans.
Radioactive Substances Act 1993.	This requires prior approval from the Environment Agency for the disposal of radioactive wastes, including the discharge of radioactive effluents to the environment.
Ionising Radiations Regulations 1999.	These specify controls on radiation exposure for members of the public and workers, as enforced by the Health and Safety Executive.
Environmental Protection Act 1990 and various waste management regulations that derive from it.	These place controls on the transport and disposal of non-radioactive wastes, as enforced by the environment agencies.
Environmental Protection Act 1990 Part IIA Contaminated Land, the Contaminated Land (Wales) Regulations 2006 and the Radioactive Contaminated Land (Modification of Enactment) (Wales) Regulations 2006	Set out the legislative regime for dealing with the legacy of contaminated land.
Water Resources Act 1991 and the Groundwater Regulations 1998.	These require prior consent from the Environment Agency for the discharge of non-radioactive effluents into the aquatic environment.
The Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2007.	This provides controls on the transport of packages containing radioactive and hazardous non-radioactive materials and wastes.
Town and Country Planning Act 1990.	This requires planning permission to be obtained for development (other than permitted development).
The Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.	These require, in some cases, the production of an environmental statement and consideration of all relevant environmental information prior to the granting of planning permission for certain types of development.
The Coast Protection Act 1949 (As Amended).	This requires consent for and places controls on off-shore work that may be detrimental to the safety of navigation or to the environment.

Further information on the regulations that may apply during decommissioning can be found in Part One, Section 8 of the main statement.

The Environmental Impact Assessment

The Environmental Impact Assessment (EIA) process identifies the potentially significant environmental effects associated with a project, e.g. decommissioning, and allows them to be taken into account in the decision making process. It comprises a series of studies, surveys and consultations in order to gain an understanding of the range of features of the local environmental conditions and based on this, makes an objective assessment of the significant environmental impacts that may be expected as a result of the decommissioning project. The information generated during the EIA is compiled in the Environmental Statement (ES) which provides an objective description of the likely significant environmental impacts of the decommissioning project and the measures that should be taken to reduce or avoid such adverse impacts.

Scoping and Consultation

A Pre-Application Opinion Scoping Report on the environmental impact of Magnox Electric's decommissioning plans was submitted to the HSE in August 2007. The report identified the physical limits of the proposed project study area and the time frame for the assessment. It identified key potential risks and the types and levels of impacts that were to be assessed. The PAO scoping report was sent to statutory and non-statutory consultees by the HSE for comment, this consultation period lasted just over a month. The HSE considered the Scoping Report in accordance with regulations and issued its pre-application opinion (PAO) as to the content of the environmental statement in November 2007. Each technical section in the environmental statement explains how, in relation to that topic, the HSE's PAO has been taken into account. Section 2 of Part One explains how matters not specific to one technical topic have been addressed.

An integral part of the Environmental Impact Assessment process is consultation with statutory and non-statutory consultees and key stakeholders. During the whole Environmental Impact Assessment process, authorities and stakeholders were consulted regarding specific issues.

Assessment of Impacts

The impacts associated with the decommissioning of Wylfa were considered under specialist topic areas. A team of independent expert consultants undertook the impact assessments.

In order for the assessment to be easier to follow each of the specialist topics assessed the impacts in broadly the same way using a number of stages:

- firstly, impact magnitudes were considered, for which the terms 'major', 'moderate', 'slight' and 'negligible' have been used throughout;
- next, the sensitivity of the receiving environment or receptor for the impact was identified; and
- finally, the significance of the impact was assessed, again using common terminology, in this case 'not significant', 'significant' and 'key significant'.

Where significant or key significant adverse impacts have been identified, mitigation is proposed. The mitigation measures propose to prevent, reduce or off-set these significant and key significant impacts are summarised in Table NTS.1.

For no technical topic is it considered there is likely to be a significant impact on the environment in another European Economic Area (EEA) state.

Air Quality and Dust

Matters Considered

The matters considered under this topic were: emissions of gaseous pollutants and particulates from vehicles; the raising and dispersion of dust from the site directly due to the site works; and the dispersion of dust from soiled vehicles or vehicles carrying potentially dusty loads off site.

How Significance is Determined

Emissions from vehicles were assessed by reference to national air quality objectives (AQOs); these exist for a range of pollutants including carbon monoxide (CO), nitrogen dioxide (NO₂), benzene (C₆H₆), 1,3-butadiene (C₄H₆) and particulate matter less than 10 micrometres (µm) in diameter (PM₁₀). If the objectives are met then current understanding is that there is no significant health risk. In respect of changes in air quality due to emissions from vehicles, an impact will be considered as ‘not significant’ if there is no change in compliance with AQOs; ‘significant’ if there is a change in compliance with one or more short term (daily periods or shorter), but no change in compliance with long term (annual average) AQOs; and ‘key significant’ if there is a change in compliance with one or more long term AQOs.

Fugitive dust issues have also been assessed, both dust directly from site and dust from off-site vehicles. In this case, significance has been determined largely on the basis of likelihood of complaint (dust nuisance), receptor sensitivity, residential properties being considered as high sensitivity, and whether commercial interests would be affected.

Project Impacts and Mitigation Measures

The traffic data used took into account predictions of future changes in background traffic in the Wylfa area. The assessment also took into account the ‘background’ air quality near Wylfa and, more generally, across the UK and how it is expected to change in the future. Pollutant levels due to vehicle emissions were estimated using the methodology set out in Department of Transport/Highways Agency’s Design Manual for Roads and Bridges (DMRB), an industry standard for this type of assessment. Using these methods, it is predicted that at no time and for no pollutant will any national AQO be exceeded as a result of the traffic associated with the decommissioning of Wylfa and on this basis the air quality impacts of decommissioning traffic have been assessed as ‘not significant’.

For the closest residential receptors the adverse impacts associated with fugitive dust in the absence of mitigation were assessed as ‘not significant’ for dust directly from

site and ‘significant’ for dust from vehicles, these determinations being applicable to both Care and Maintenance Preparations and Final Site Clearance. Therefore mitigation measures are proposed in respect of dust from off-site vehicles, as set out in Table NTS.1. With mitigation measures in place it is considered that dust impacts from vehicles would be ‘not significant’ for both Care and Maintenance Preparations and Final Site Clearance. With regards dust from on site activities, in terms of best practice the Building Research Establishment Code of Practice for the control of dust from construction and demolition sites will be followed. Specifically, the measures shown in Table NTS.1 are proposed and will be implemented as appropriate.

During Care and Maintenance there are unlikely to be activities on site and or vehicular movements with potential to cause significant air pollution or raise dust. Following Final Site Clearance, there will be no vehicle emissions and no potential for dust associated with the site.

Further information on air quality and dust can be found in Part Two, Section 10 of the main statement.

Archaeology and Cultural Heritage

None of the archaeological or historical features identified in the assessment lie within the Wylfa site or will be physically affected by the proposed decommissioning project. There is no evidence of any surviving features of archaeological interest within the licensed power station site that will be physically affected by the decommissioning project. The initial construction of the power station, particularly the deep foundations and basements of the turbine hall and reactor building, would have already affected any below ground remains. The potential for any further remains on the site is negligible.

However certain features of the historic landscape have the potential to have survived the disturbance of construction within the immediate vicinity of the power station, in the area of car-parking and overflow car-parking between Porth y Pistyll and Porth y Gwartheg and in the vicinity of the outflow at Porth Wnal and within the wider NDA land holding. A walkover survey to identify any surface evidence of previous occupation and land use, including agricultural, industrial, maritime and wartime operations, will be undertaken prior to commencing any decommissioning works within these stated areas.

Further information on archaeology and cultural heritage can be found in Part Two, Section 11 of the main statement.

Ecology

Matters Considered

The matters considered under this topic were:

- habitat loss including the removal of on-site structures potentially used by bats and/or protected bird species;
- the effects of the removal of off-shore structures on birds and marine flora and fauna, including habitat loss and disturbance due to the work;

- the effects of noise, vibration and visual disturbance on fauna, particularly on birds using the foreshore;
- potential changes in incidental mortality of birds, amphibians, reptiles and/or other protected species as a result of site works or of changes in vehicle movements;
- possible effects of dust on sensitive habitats;
- potential effects of accidental spills or pollution on nearby water bodies and watercourses where there is a pollutant pathway from the site; and
- potential effects, similar to those listed above, upon sites designated for their nature conservation importance that are remote from the site.

The effects of the permanent loss of warm water discharges on marine flora and fauna (though strictly an effect of end of generation rather than of decommissioning as such) were also included in the assessment.

How Significance is Determined

For this topic, the significance of an impact was determined in part on the nature conservation value of the ecological receptors (populations or habitats) affected. Nature conservation value is largely derived from a consideration of the degree of legal protection extended to a receptor (for example under the Conservation (Natural Habitats etc) Regulations 1994 or the Wildlife and Countryside Act 1981, as amended), or the weight attributed to the receptor in central or local Government policy (for example the UKBAP or LBAP). Population size and species or habitat rarity in a local or national context are also factors.

Project Impacts and Mitigation Measures

For the period of Care and Maintenance Preparations, in the absence of mitigation, the following significant adverse impacts were identified:

- disturbance to or loss of small amounts of coastal cliff grassland and strandline vegetation by use of Laydown Areas 1 and 2;
- loss of, or disturbance to habitat of moderate botanical interest in Laydown Area 2;
- disruption of the adjacent cliff habitat complexes by fragmentation of the coastal wildlife corridor due to extension of laydown area onto the cliff;
- potential degradation of species-rich vegetation on the AONB and Heritage Coast and in the Tre'r Gof SSSI caused by deposition of dust generated from demolition activities on site;
- accidental killing of adders during demolition of the towns water tank;
- disturbance to bird species from construction of a coffer dam, demolition of the Outfall Gatehouse complex and explosive demolition of the offshore Cooling Water jetty and offshore seawater intake structures;
- loss of habitat and increased disturbance could cause severe disruption to the gull colony in Laydown Area 1;
- potential loss of habitat and or buildings could impact breeding birds, including loss of nests, eggs and dependent young;
- the loss of Building 99 which supports a roost of common pipistrelle bats and the loss of other buildings with moderate or high potential to support roosting bats and subsequent loss of potential and actual roost sites;

- disturbance to foraging bats from light spill;
- disturbance to cetaceans and grey seals from explosive demolition of the Cooling Water jetty and offshore seawater intake structures.

No key significant adverse impacts were identified by the ecological assessment.

The proposed mitigation against disturbance to or loss of coastal grassland in Laydown Area 2 is to use a buffer strip. The buffer strip will be marked off (by fence or hedge) from working areas to prevent incursion by personnel and vehicles and site measures to prevent spillages of materials into the coastal strip will be implemented. Personnel will be instructed on protection of the coastal strip. With this mitigation in place the impact on the coastal strip will be 'slight' and 'not significant'. To prevent loss or disturbance to the coastal wildlife corridor adjacent to Laydown Area 1 it is proposed that no part of Laydown Area 1 is to extend beyond the outer security fence. With this mitigation in place the impact on the coastal wildlife corridor will be 'slight' and 'not significant'.

Dust can have adverse physiological effects on plants, e.g. reduction of gas-exchange or light penetration at the leaf surface (both affecting photosynthesis) and at the ecological scale it is therefore theoretically possible that plant communities might be altered because of differential effects on different species. In the worst-case scenario, there could be some degradation of species-rich vegetation on the AONB and Heritage Coast and in the Tre'r Gof SSSI. Dust generation in the concrete crusher and elsewhere will be controlled by the use of dust suppression techniques, as detailed in Part Two, Section 10 (Air Quality and Dust) of the main statement. With this mitigation, impacts on the AONB, Heritage Coast and the SSSI will be 'negligible' and 'not significant'.

The loss of habitat and increased disturbance to the gull colony in Laydown Area 1 will be mitigated by Laydown Area 1 being limited to the areas inside the outer security fence, thereby minimizing the amount of habitat which would be lost. This would limit the impacts on the breeding colony to an increase in noise and visual disturbance during the use of this area for laydown activities. The gull colony is however habituated to disturbance associated with normal power station operations and therefore the impact would be 'slight' and 'not significant'.

Potential loss of habitat and or buildings used by birds will be mitigated by ensuring that clearance of habitat and demolition of buildings used by birds is undertaken outside of the bird breeding season. With this in place, the impact of direct loss of habitats upon breeding birds would be 'negligible' and 'not significant'.

Impacts on adders during demolition of the towns water tank will be mitigated by placing reptile-proof fencing around the decommissioning works area and removing reptiles from within by hand searching or the use of refugia. Hand strimming will also be used to discourage adders from using the area prior to demolition. Following removal of the towns water tank, habitat suitable for adders will be reinstated. With this mitigation in place impacts on adders will be 'not significant'.

Any demolition of buildings harbouring bats, such as Building 99, will of necessity take place under a European Protected Species Licence (EPSL) from CCW. Such licences always require a comprehensive mitigation plan based on up to date survey

results. Therefore at least two years prior to demolition (which is not due to occur until after 2015) further surveys will be carried out on the bat roost in Building 99 to determine the species using the roost and their flight paths and foraging areas. Under licence from CCW, Magnox Electric will ensure the safe exclusion of bats from Building 99 prior to its demolition and will provide alternative roosting sites for the affected bats, together with any other mitigation that CCW deems necessary to ensure the favourable conservation status of the affected bats. With this mitigation there will be a 'negligible' and 'not significant' impact on bats roosting in Building 99. In addition, a programme of internal inspection and survey work will be carried out on those buildings with 'moderate' or 'high' potential to support roosting bats. This work will begin at an appropriate time (in the order of two years) prior to their demolition (which is not due to begin until after 2015). Mitigation for buildings with bat roosts would need to include works for the safe exclusion of bats and provision of alternative roost sites, under agreement and licence from CCW. In buildings where surveys do not find roosts a 'watching brief' will be maintained during demolition, supervised by a suitably qualified and experienced ecologist. All staff involved in such work will be made aware of the potential for 'high' and 'moderate' buildings to house bats and if bats are found then work will stop immediately and CCW will be informed. With this mitigation in place the impact on bats will be 'negligible' and 'not significant'.

During winter months there may be light spill from working areas into areas used by bats for foraging. However, normal working hours will be 07.30 to 17.30 and light spill will be minimised by the use of directional lighting. Light spill is therefore unlikely to affect bats during the spring, summer and autumn months when they are active. At most there will be a 'negligible' impact on foraging bats which will be 'not significant'.

With regards to disturbance to birds, in particular terns and the gull colony adjacent to Laydown Area 1, from the construction of a coffer dam at the Outfall Gatehouse location and demolition of the Cooling Water Outlet Culverts, Outfall Gatehouse and offshore structures, mitigation will involve ensuring that works are conducted outside of the breeding bird season (March to September). With this mitigation in place the impact is assessed as 'slight to moderate' in magnitude and 'not significant'.

The use of explosives could cause severe but brief disturbance to marine mammals. Potential impacts will be minimized by carrying out explosions at low tide and visual checks for marine mammals offshore will be carried out by a dedicated observer standing onshore at a suitable vantage point near the jetty at least 1 hour before any planned explosion. If a marine mammal is spotted within 2km of the jetty then it will be tracked until it is out of range and the use of explosives will not commence until at least 30 minutes after the last detection of a marine mammal. With this mitigation there will be a 'negligible' impact on marine mammals and this is assessed as being 'not significant'.

During the Care and Maintenance phase the site will be maintained in a mainly quiescent state and there will be little potential for adverse ecological impacts. No significant adverse impacts have been identified at this stage. There may be a beneficial impact owing to likely colonization of the site by valued ecological receptors.

Prior to Final Site Clearance, further surveys would be undertaken to confirm the presence or absence of species of conservation concern, which may result in a requirement for new or amended mitigation measures. Buildings will be inspected for their suitability for bats and an appropriate level of breeding bird surveys will also be undertaken, including a peregrine survey.

No adverse impacts are identified for the time following Final Site Clearance, but the cleared site could instead represent a net gain in nature conservation, depending on the site's end state. However, given the extensive time frame of many decades, there must be considerable uncertainty about future perspectives and imperatives on land use and nature conservation issues; therefore specific site enhancement measures (e.g. artificial establishment of vegetation) have not yet been considered.

Further information on ecology can be found in Part Two, Section 12 of the main statement.

Geology, Hydrogeology and Soils

Matters Considered

The matters considered under this topic were:

- the consequences of any remediation of contaminated ground and/or groundwater, both while carrying out the works and subsequently;
- inadvertent or uncontrolled disturbance or spreading of existing contaminated soils, including movement by windblown dust, entrainment in rainfall runoff, attachment to vehicles and/or inappropriate soil handling operations;
- compaction of soil due to vehicular movements and degradation of soil quality due to construction activities and lay down areas;
- mobilisation of existing contamination by direct rainwater infiltration due to changes in ground cover or the creation of temporary open excavations;
- 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);
- creation of new contaminant migration pathways (e.g. due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata);
- inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials;
- inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or material as infill material;
- inadvertent effects on groundwater flow and quality due to infilling of deep basements and the breaching of basement structures to prevent ponding;
- spills or leaks of radioactive and non-radioactive substances; and
- inadvertent effects of local dewatering on groundwater resources and nearby abstractions, watercourses and sites of conservation interest.

In addition, consideration has been given to changes in the groundwater regime potentially leading to:

- Changes to the risk of groundwater-induced flooding (on or off site); and
- Changes to the risk of groundwater-induced building damage (on or off site).

How Significance is Determined

For this topic the significance of an impact was determined on the basis of whether:

- there would or could be a change in restrictions on land or groundwater use;
- a change in monitoring and reporting would be required;
- there would be a change in regulatory processes that applied; or
- there would be a requirement for remediation.

In determining the significance of any impacts consideration was given to local groundwater uses, ecological sensitivity, statutory designations and the effect of distance in reducing any changes to water quality or flow.

Project Impacts and Mitigation Measures

A number of potential adverse impacts on geology, hydrogeology and/or soils arising from the decommissioning process have been identified. These potential effects include changes to ground and groundwater quality and/or groundwater quantity (levels and flows), deriving from the following:

- remediation of contaminated ground/groundwater;
- inadvertent or uncontrolled disturbance or spreading of existing contaminated soils;
- creation of new migration pathways;
- direct rainfall infiltration, caused by changes in ground coverage and temporary open excavations, resulting in the mobilisation of existing contamination;
- temporary storage or inappropriate use of contaminated soils and materials, resulting in the inadvertent contamination of ground/groundwater;
- spills and leaks of non-radioactive materials;
- the impact of the infilling of deep basements and the breaching of basement structures on groundwater flow and quality; and
- local dewatering resulting in inadvertent effects on groundwater resources and nearby watercourses and sites of conservational value.

It is predicted that these potential adverse impacts will predominantly arise during the Care and Maintenance Preparations phase and/or the Final Site Clearance phase. Following a precautionary approach, most of the adverse impacts were considered to be potentially significant or key significant. Therefore, mitigation measures have been proposed as set out in Table NTS.1. These involve following best practice and/or all applicable British Standards or EA Pollution Prevention Guidance Notes. With these in place none of the residual impacts are predicted to be significant.

Several of the tasks carried out or impacts arising during Care and Maintenance Preparations may give rise to ongoing impacts for Care and Maintenance and beyond, e.g. completion of remediation of contaminated ground, which would give rise to ongoing significant benefits or, in the absence of mitigation to prevent it, the creation of a new contaminated area, which could give rise to on-going adverse impacts. However, under normal circumstances, there will be no activities undertaken during Care and Maintenance with the potential to result in new impacts, whether adverse or beneficial. If any works were to be carried out during Care and Maintenance, depending on the exact work carried out, the impacts and mitigation measures would be similar to those identified for the Care and Maintenance Preparations phase as set out in Table NTS.1. During this phase, the quantities of contaminating substances present on site which could give rise to adverse impacts on soil and/or groundwater quality are much reduced compared with the baseline year 2007.

Final site clearance works will be similar in nature to those undertaken during the Care and Maintenance Preparations phase. The impacts and proposed mitigation measures are therefore as for Care and Maintenance Preparations. The main difference in the case of Final Site Clearance, though, is that the beneficial impact of having completed any necessary remediation of contaminated ground is 'key significant', as all restrictions associated with any contamination will have been removed.

Further information on geology, hydrogeology and soils can be found in Part Two, Section 13 of the main statement.

Landscape and Visual

Matters Considered

The landscape and visual impact assessment addresses impacts on the landscape resource (*e.g.* loss of trees, changes to landform *etc.*), impacts on views (*e.g.* changes to scenic composition) and the consequent changes to landscape character.

How Significance is Determined

A three stage process was adopted for the evaluation of the significance of the landscape and visual impacts. First, the magnitude of the landscape or visual impact was assessed. This was followed by an assessment of the sensitivity of the landscape resource or visual receptor. Using these two assessments, the significance of the impact was then judged for each assessment stage.

To achieve this aim, the landscape and visual assessment process included:

- assessment of the existing landform, landscape planning context and landscape character, as shown on Figures WYA/LV/1, 3, 4 and 5;
- identification of typical viewpoints from the surrounding area, as shown on the visual appraisal, Figure WYA/LV/2;
- definition of the Visual Envelope of the existing power station site, as shown on Figure WYA/LV/8;
- definition of the Zone of Visual Influence of the decommissioning phases, as shown on Figures WYA/LV/9-11;

- assessment of the magnitude of both landscape and visual impacts;
- assessment of the sensitivity of landscape and visual receptors;
- description of the impact assessed for each of the decommissioning phases, making reference, where appropriate, to night-time impacts and to character; and
- assessment of the significance of landscape and visual impacts.

The significance of impacts was determined on the basis of the magnitude of impact in relation to the sensitivity of the existing landscape resource and views, having regard for factors such as:

- statutory and non-statutory designations;
- the location, context and rarity of viewpoints;
- the expectations and activities of the viewer and the number of people affected;
- the extensiveness or otherwise of particular views; and
- the popularity of locations and views and their appearance in guidebooks or tourist maps.

Project Impacts and Mitigation Measures

During Care and Maintenance Preparations the power station will be in a state of change, with structures being dismantled, modifications being made to the reactor building, the construction of a radioactive waste storage building and new gatehouse. There will also be some additional lighting associated with the works during the hours of darkness at the start and end of the working day during winter months which is not expected to have any significant impact. Nevertheless, as a matter of best practice, directional lighting is proposed to reduce light spillage beyond those areas of work which are intended to be lit. It is anticipated that the dismantling works, re-cladding and modification activities would result in significant impacts on local and medium distance views and key significant impacts on the Area of Outstanding Natural Beauty (AONB). There are no significant landscape impacts anticipated, however landscape character may have significant adverse impacts corresponding to the visual impacts on typical viewpoints.

During Care and Maintenance there will be an overall reduction in the massing of built form (despite the new radioactive waste storage building) as a result of the removal of existing buildings on site, (notably the turbine hall). However, visual impacts will be largely adverse due to the shiny nature of reactor building cladding material (standing seam stucco embossed untreated aluminium, assessed in its first few months before it weathers to a dull grey) and loss of subtlety in building composition and tone with some significant negative impacts. The exception is where a clear reduction in visual clutter will be apparent, resulting in significant benefits in AONB views. 20 years into Care and Maintenance the appearance of the re-cladding will have mellowed and therefore most of the adverse impacts will no longer be significant.

During Final Site Clearance the remaining buildings will be dismantled, including the reactor building. These activities will create visual impacts similar to those during Care and Maintenance Preparations albeit to a slightly reduced extent due to the

smaller numbers of buildings and structures involved. Most distant views will remain largely unaffected because equipment used for dismantling work will be barely perceptible at such distances. Significant adverse visual impacts during Final Site Clearance will be observed from local and middle distance views. Key significant adverse impacts will be observed from two AONB views. These visual impacts will result in corresponding impacts on landscape character.

The visual impacts of decommissioning are, in the longer term, overwhelmingly beneficial. Key significant benefits will occur in a number of sensitive viewpoints from the Isle of Anglesey AONB. There will be corresponding benefits to the landscape of the locality, arising from the widespread benefits to views following Final Site Clearance. There will also be a significant benefit on the setting of nearby listed buildings at Cafnan Mill and on the built environment following Final Site Clearance.

No planting mitigation is proposed, nor is it considered to be necessary, because significant adverse visual impacts would either be for a limited duration or the proximity and location of these views makes it impractical to provide fully effective screening over and above that which already exists both on and off site.

The impact associated with any additional lighting on site at the start and end of the working day during winter months of Care and Maintenance Preparations and Final Site Clearance has been assessed as 'not significant'. Nevertheless, in order to contain the extent of illumination only to those areas which are intended to be lit, it is proposed that any new or replacement lighting installed on site would be directional lighting.

Further information on landscape and visual impacts can be found in Part One, Section 14 of the main statement.

Noise and Vibration

Matters Considered

The noise and vibration assessment has taken into account noise and vibration deriving directly from the Wylfa site, as well as that due to site traffic (including the use of Heavy Goods Vehicles (HGVs)). The traffic data used in the assessment took into account predictions of future changes in background traffic.

How Significance is Determined

For this topic significance has been determined largely on the basis of the change in noise level and receptor sensitivity with residential properties being considered as high sensitivity.

Project Impacts and Mitigation Measures

For general site works (with no mitigation) worst-case noise impacts during Care and Maintenance Preparations are predicted to be significant at seven residential locations and at the Wylfa Power Station social club located within the area of the former Simdda-Wen. At five receptors the impacts are assessed as 'not significant'.

The assessment of direct site noise is pessimistic in that it assumes that all of the plant/equipment on the site is operating at the centre of the closest work area to the receptor in which work is being carried out. In reality, plant would be used intermittently and on different parts of the site, so it is likely that noise levels will be lower than those predicted.

During the Care and Maintenance phase and following Final Site Clearance, no noise sources of relevance to receptors would operate on site, thus no 'significant' or 'key significant' effects are anticipated.

For Final Site Clearance noise impacts are expected to be moderate at most. Four residential receptors are assessed as being subject to significant noise effects whilst impacts on another eight residential receptors and the Power Station social club are expected to be 'not significant'.

Traffic noise and vibration levels from the decommissioning process are assessed as 'not significant' at all receptors due to the low magnitude of change involved and small numbers of people affected. Traffic noise levels for the Care and Maintenance phase and following Final Site Clearance are reduced compared to the 'without decommissioning' scenario as the station would have significantly reduced levels of staff compared with those required to maintain the station in a quiescent state.

For noise impacts during the Care and Maintenance Preparations and Final Site Clearance phases that have been assessed as 'significant', mitigation measures have been proposed as set out in Table NTS.1. However, until detailed working methods are defined it is not possible to determine the noise level reduction that would be gained through use of mitigation. However, mitigation will reduce noise levels and, depending on the level of reduction, will also potentially reduce the significance of noise impacts. Therefore for general site works during Care and Maintenance Preparations and Final Site Clearance, the post mitigation worst-case noise impact will possibly be 'significant'.

During Care and Maintenance and following Final Site Clearance there will be no construction or demolition noise on the Wylfa site. There will also be much less traffic associated with the site as there will be significantly reduced levels of staff because of decommissioning. There will be no generating noise from Wylfa. Noise levels during these phases are therefore predicted to be lower at receptors than in the baseline year 2007, the nearest residential receptors being predicted to experience average noise levels just below 50 decibels. For Final Site Clearance, the reduction in noise level will be permanent.

Further information on noise and vibration can be found in Part Two, Section 15 of the main statement.

Socio-Economic

Matters Considered

The main impacts considered under this topic were:

- changes in direct and indirect employment supported by the power station, including the scope for retraining and reskilling of the existing power station workforce to enable their employment in the decommissioning works;
- effects on employment and unemployment levels in the local economy, and changes in the structure of local employment;
- changes in local expenditure by power station employees, Magnox Electric and its contractors;
- in-migration and out-migration of power station employees and contractors and resulting changes in local population levels and structure;
- changes in the demand for temporary accommodation;
- changes in the demand for permanent housing and effects on the local housing market;
- changes in pupil numbers in local schools; and
- changes in the demand for community/amenity facilities and services;

Other impacts which have been considered in the assessment, but in less detail, include:

- changes in commuting patterns;
- effects on key local economic sectors (e.g. tourism, agriculture, fisheries);
- changes in the development potential of the area; and
- changes in the incidence of social problems including crime and disorder.

These impacts were primarily considered in respect of the implications of decommissioning for the local economy defined as the Isle of Anglesey. The choice of study area for the socio-economic assessment largely reflects the residential distribution of the existing power station workforce. Just over 87% of the current power station workforce resides within the Isle of Anglesey itself. The residual workforce (13%) commutes from other parts of Wales and parts of England. Most of the predicted socio-economic impacts arising from decommissioning are likely to be contained within the Isle itself.

In order to capture a range of more localised impacts, the Isle of Anglesey has been sub-divided into three areas as follows:

- Anglesey North - based on the communities immediately surrounding the power station (including Cemaes Bay and Amlwch);
- Anglesey West – based on the town and hinterland of Holyhead;
- Anglesey South – based on the settlements/hinterland in the south of the Isle stretching to the mainland.

How Significance is Determined

The significance of impacts was determined on the basis of:

- the magnitude of the predicted impact (defined as the percentage change in the impact receptor compared with the baseline);
- the geographic extent of the impact;
- the duration and reversibility of the impact;
- the capacity of the local economy to absorb or adjust to the impact; and
- typical rates of socio-economic change experienced in the study area (e.g. recent rates of population and employment growth).

Project Impacts and Mitigation Measures

The Isle of Anglesey has the smallest economy in the whole of Wales valued at £646 million in 2005 which results in a gross value added (GVA) of £9,392 per head of population (the lowest in the UK). Any decommissioning effect has to be considered in relation to this starting position.

Wylfa power station has become an important part of the Anglesey economy over the last thirty years. It has been one of the few large scale employers outside the public sector since 1971 when the station started to generate electricity. The loss of the station will lead to the loss of 750 direct jobs and could result in the loss of a further 108 full time equivalent jobs elsewhere from the local economy. These jobs have a high productivity per employee so their loss inevitably reduces gross value added still further. Whilst the local economy is generating new employment opportunities, there is limited scope for attracting jobs with a similar level of productivity.

The loss of the power station will remove a stable source of predominantly male, high-wage employment from the local economy. The station also performs a broader community role by helping to sustain a number of critical services (both public and private) needed by the workforce and their dependents. Schools, libraries, doctors, nurseries, community and social care day centres all rely on sufficient need to sustain their demands for scarce public sector support.

The Socio-Economic Section has identified and, where possible, quantified these effects through an examination of Wylfa's role as an employer and its indirect impacts as a part of the Isle of Anglesey economy. Some of the key facts identified are:

- Wylfa employs 3.5% of the employed workforce of the Isle of Anglesey;
- a further 406 resident adults and 450 children are estimated to be affected by the closure as a result of being part of families of Wylfa workers;
- around 173 adults (resident workers and partners) and 67 children (representing 98 households) are expected to migrate away from the island entirely after the end of Care and Maintenance Preparations;
- in addition to the jobs lost from the station itself, a further 108 jobs are supported through expenditures of the station;
- 30,000 visitors per annum to the Information Centre will be lost, although this is not expected to cause changes in the number of visitors to the Isle of Anglesey;
- average wage levels are likely to be depressed by 2.1%;

- temporary boost to the tourist accommodation sector from an influx of an additional 400 contract workers per annum over two months during station outages will be lost.

Outside the quantifiable effects there are the less tangible effects of losing a longstanding employer with a significant physical and community presence established over a 30 year period (e.g. through being active within the local community through the actions of its employees and as a corporate body interested in maintaining the goodwill of the community).

The key aim of the Socio-Economic Section (Part Two, Section 16 of the main statement) has been to place the effects of decommissioning the station within a wider socio-economic context. As the majority of employees come from within the Isle of Anglesey, the focus for this work has been to assess the closure's impact in relation to the economic performance of the Isle of Anglesey itself and its communities. A series of objective tests have been established for examining how 'significant' the closure will be for the Isle of Anglesey economy and community. These tests have been taken from good practice established in assessing decommissioning impacts within the UK. These tests need to be considered in the round so an overview is taken on the significance of Wylfa's closure. The overall assessment takes into account the scale of effect; degree of adjustment required by the locality; reversibility of the effect and so forth. These tests are focused on quantitative criteria to maintain objectivity within the assessment although the use of these criteria is not intended to deny the importance of the more intangible aspects of a large closure on a community.

The assessment shows the local economy's development has been shaped by the Isle of Anglesey's physical attributes of an attractive coastline and remoteness that has encouraged certain industries to grow but discouraged others. A remote coastal location has provided access to water for cooling a nuclear power station; the space for coastal and countryside related recreation and a convenient sea crossing point to Ireland. Tourism and transport, as well as power generation, have grown and encouraged a range of associated industries to develop, including electrical energy-intensive aluminium smelting using low cost power from the power station.

A remote coastal location also offers an attractive amenity value to households looking for the benefits of a rural lifestyle including retirement households. The Isle of Anglesey is particularly attractive to older households who may have been able to use the proceeds from house sales in higher cost areas of the country to fund house purchases in this area. This demographic profile increasingly dominated by older people has, in turn, an influence on the mix of services and housing available in the area.

Whilst a remote coastal location can attract certain types of industry and person, distance from centres for population acts as a significant break on growth potential for others. Many of the nationally significant, high growth sectors of the economy, like business and financial services, tend to thrive in larger accessible population centres with good connectivity to customers, a labour force and other businesses that they work with. These sectors are weakly represented in the island's economy currently. The area has also consistently lost younger, working age people, possibly reflecting a mix of limited work opportunities and lifestyle choices.

Relatively speaking, other parts of the North Wales sub region seem better able to deliver the densities of population/business and connectivity to the wider economy and access to administrative centres than the Isle of Anglesey itself. The Anglesey economy has tended to under-perform in relation to the Welsh average across a number of indicators, including: gross value added per head of population; rates of new business formation; migration of working age population; unemployment; and economic activity.

The problems of remoteness are magnified for the remote North Western corner of Anglesey which is ideal for the power station in terms of accessing cooling water but some distance away from key centres of population both within the Isle of Anglesey itself and more widely.

As the composition of the population shifts towards a higher proportion of non-economically active (reinforced by demographically selective migration) and lower productivity sectors of the economy (e.g. tourism), output per head of population is going to come under further downward pressure.

The risk is that the Isle of Anglesey settles into a low performance equilibrium as expectations within the labour market are lowered resulting in a population with few incentives to improve skills (unless the intention is to exploit them somewhere else) and employers who have no particular demand for the skills. The net result is that both sides of the labour market reinforce each other downwards.

Whilst the assessment has identified relative performance issues, the economy is still creating jobs but at a slower rate than the general economy. The trends suggest that the economy can make the adjustment to the loss of employment and reverse the absolute effects of closure given time.

The assessment has also identified an array of public sector initiatives aimed at changing the direction of the study area and preventing it from settling into a low performance equilibrium. The Isle of Anglesey County Council is committed to creating a modern infrastructure base to support diversification of the study area economy. The Nuclear Decommissioning Authority strategy has also identified the area as a priority for support.

Whilst the assessment of the proposed decommissioning project has not met all the criteria used to identify ‘key significant’ effects, the decommissioning process will, nevertheless, produce a number of significant impacts, including:

- the long term adverse impact on employment opportunities in the sub area containing the site, known as Anglesey North, that will occur by the end of the Care and Maintenance Preparations;
- a short term, major, adverse effect on unemployment especially in Anglesey North at the end of the Care and Maintenance Preparations; and
- the generation of employment for almost a decade during Final Site Clearance represents a significant impact for the immediate cluster of wards. The impact is beneficial, short term and major in magnitude.

The ability of Magnox Electric to directly avoid or reduce the significant adverse employment impacts during decommissioning is limited. The scope for redeployment

or retraining of staff within Magnox Electric will be constrained and, although assisting the individuals affected, this will not prevent the long term loss of stable well paid employment opportunities from the local economy. The mitigation measures are not expected to lead to any sizeable reduction in the magnitude or significance of the predicted socio economic impacts described above.

During Final Site Clearance, many predicted socio-economic impacts are beneficial. Opportunities exist to minimise the leakage of economic benefits from the local economy by encouraging the use of local contractors and local labour. The site operator will encourage its contractors to make use of locally sourced labour, materials and services as far as practicable. Measures will be undertaken to provide contractors with information on suitably qualified local companies capable of involvement in the decommissioning work.

The cumulative impacts associated with the closure of Anglesey Aluminium Metals (AAM) compound the effects identified for the decommissioning of the station. The loss of AAM will lead to a further loss of 652 directly employed jobs in the company and a further 248 jobs in the rest of the economy through indirect and induced effects. Around 95% of these jobs are occupied by people resident in the Study Area. The average wage attached to these jobs is 65% greater than the average for jobs within the local economy. AAM's loss will also remove an active apprenticeship programme employing 12 apprentices on site who have achieved success under the 'Engineering Employers Federation Apprentice of the Year Competition for Wales'. The loss of the smelter reinforces some of the trends identified earlier as opportunities for higher productivity work are removed. Growth, therefore, becomes more reliant upon the other sectors where the local economy has a comparative advantage but where the added value tends to be lower.

Further information on the socio-economic impacts can be found in Part Two, Section 16 of the main statement.

Surface Waters

Matters Considered

The surface waters assessment primarily addressed:

- the removal of off shore structures;
- impacts on surface water quality from changes in the non-radioactive content of routine discharges from the site;
- changes in the non-radioactive content of routine discharges of operational effluents associated with decommissioning;
- the potential release of turbid and/or contaminated water (e.g. via storm drains) due to decommissioning activities on site;
- changes in the risk of on- or off-site flooding as a result of decommissioning (e.g. due to changes made to storm drains, construction of new buildings or hardstandings or removal of existing buildings or hardstandings);
- impacts to water quality in bathing areas;
- changes to the site's runoff characteristics;

- the non-radioactive content of discharges of operational effluents authorised under the Radioactive Substances Act 1993;
- radioactive discharges;
- sediments released due to movements of HGVs and heavy plant;
- changes to coastal erosion processes caused by the cessation of cooling water discharges;
- flood risk; and
- impacts relating to potential spills and leaks of radioactive and non-radioactive substances to nearby waterbodies.

How Significance is Determined

For this topic the significance of an impact was determined on the basis of whether:

- there would be a change in compliance with specified short term environmental assessment levels or environmental quality standards; or
- there would be an increase or decrease in the number of discharge consents required; or
- an existing discharge consent would be breached; or
- there would be a requirement for remediation; or
- restrictions on surface water use would have to be introduced.

Project Impacts and Mitigation Measures

Pathways exist that could cause impacts to the terrestrial and coastal surface waters in proximity to Wylfa power station during the decommissioning process. During Care and Maintenance Preparations and Final Site Clearance activities such as demolition, excavation, soil handling, construction and the movement of plant/traffic have the potential for releasing sediments to terrestrial and coastal waters. Mitigation has been proposed in line with the EA's Pollution Prevention Guidance PPG series which will minimise the magnitude of these impacts so that there will not be any significant impacts on surface waters arising from the decommissioning process.

The potential impact of spills and leaks of non-radioactive substances on the terrestrial and coastal surface water environments has been assessed for the three phases of decommissioning. The coastal waters are considered to be at greater risk due to their closer proximity and linkage via the existing drainage systems. In the absence of mitigation the impacts relating to minor spills and leaks on the coastal environment could result in a moderate impact, based on the fact it could cause a change to EQS or EAL compliance. The impact has been assessed as potentially significant due to the proximity of bathing waters at Cemaes Bay and Cemlyn Bay. There are two terrestrial watercourses within 0.5km of the site which may also be at risk from spills or leaks. Any spillages could result in a moderate impact on these watercourses due to the fact that it may cause a change to the water quality in terms of GQA grade as well as EQS and EAL compliance. The impact is considered potentially significant as the existing quality of the water environment is expected to be of high quality.

Mitigation measures designed to minimise the risk of spills and leaks have been proposed. With mitigation in place the impacts relating to minor spills and leaks on the surface waters environment will not be significant.

Care and Maintenance is a largely quiescent phase. However, at times maintenance works may be carried out. The potential impacts on surface waters of such maintenance works and the mitigation measures required would be the same as those discussed for Care and Maintenance Preparations. Otherwise, the only impacts during this phase would be that Wylfa's contribution to discharges of treated effluent from the off site sewage plant will be significantly reduced, causing a slight but not significant benefit to surface water quality.

There is a permanent significant beneficial impact following Final Site Clearance due to the end of all site discharges and the complete removal of the need for any discharge consents from the site.

Further information on impacts on the surface water environment can be found in Part Two, Section 17 of the main statement.

Coastal Issues

The shoreline around Wylfa is comprised of hard, metamorphosed sedimentary rocks that protrude from the sea. On the flanks of the headland the rocks slope from the shoreline at a relatively shallow angle, whilst the rocky sea cliffs are found at the northern edge of the headland.

Cemaes Bay, to the east of Wylfa Head, is a natural bay comprised of shallow cliffs, a natural harbour occupied by a small fishing village and a sandy beach. Cemlyn Bay, to the west of the headland, is considered to be the best example of a saline coastal lagoon in Wales and is designated as a SSSI, SPA and SAC. The lagoon is separated from the sea by a shingle bank with a narrow channel at the western end, across which a sluice system was built in the 1930s. Seawater exchange occurs mainly through the sluice and by percolation through the shingle bank, although in extreme storms coinciding with spring tides waves break over the top of the shingle bank.

There are two tidal streams at work off the coast of north Wales caused by water travelling from south and north. These two streams meet in the vicinity of the Isle of Man deflecting water eastwards along the northern coast of Anglesey. Wave climate comprises both swell waves and locally generated wind-waves. The coastline is exposed to both winds from the south west as well as winds from the north. In addition, swell waves can be formed within the Irish Sea promoted by swell entering from the Atlantic from both the north and the south. There is potential for wind waves to reach a significant height due to the uninterrupted fetch available both from the west and the north.

Storm surge is a rise in sea level that propagates outwards from an area of very low atmospheric pressure. In the UK surge is defined as a water level that is $\pm 0.6\text{m}$ different from the predicted tide levels. Surges of this kind can originate within the Irish Sea and further out in the Atlantic Ocean. These surges can push water levels higher than ordinary tide levels (positive surge) increasing the possibility of flooding and erosion.

Analysis undertaken as part of the safety case (flooding) has predicted water levels for the 1 in 10,000 year return period. This analysis takes into account tidal surges and wave action. This suggests that extreme water levels may reach 9.41m Above Ordnance Datum (AOD). Water levels of this kind would affect the cooling water pumphouse. This could cause the power station to have to use auxiliary cooling systems but would not impact the turbine hall, reactor buildings or switch-houses.

The existing rates of erosion for Wylfa Head are not known, although it is known that the underlying strata is comprised of hard, metamorphosed rock with a relatively high resistance to erosional attack. Therefore, the expected increase in storm frequency and intensity may increase rates of erosion but the impact of this on the headland and cliffs is not going to be significant over the timescale of the decommissioning process.

Climate change will lead to an increased frequency of storms and will alter the return intervals for given sea levels. Sea level rise, independent of any given changes in storm surge frequency and intensity can be accounted for by simply adding the mean sea level to the sea level associated with any particular return frequency.

Mean sea level is expected to rise by between 0.14 m and 0.74 m off the Welsh coast by 2080. Such a change would take the 1:100 year sea level as calculated at Amlwch to between 5.19m AOD and 5.45m AOD depending on the CO₂ emission scenario being used. Wave heights are also expected to increase but specific values cannot be assigned to the potential height of waves expected in the future.

Currently the Wylfa power station site is protected from the sea by shallow gradient rock foreshore. At some locations this is topped by a sea wall. Generally the integrity of the rock making up Wylfa Head and cliff sections of the North Anglesey coast is such that additional coastal protection is not required.

Due to positioning of the power station and the nature of the geology of the coastline in close proximity to the power station this site is buffered and protected against the potential risks and threats posed by coastal erosion, flooding and climate change. Even when conservative climate change allowances are introduced it would appear that the power station can operate and be decommissioned safely.

Further detailed information on coastal issues can be found in Part Two, Appendix 17/1 of the main statement.

Traffic and Transport

Matters Considered

The traffic and transport assessment considered the impact of traffic associated with the decommissioning project at Wylfa on the operation of the highways, road safety and the local 'environment', including the experience of or difficulties encountered by other road users and pedestrians (excluding the noise/vibration and emissions effects of traffic which were considered separately under the topics of noise and vibration and air quality respectively).

The traffic impacts were assessed through consideration of the percentage changes in total vehicle numbers and, separately, in HGV numbers. Other factors considered

included the operational capacity of the roads, recent accident records, the presence of vulnerable road users and of residential properties, schools, hospitals etc. Predictions of future background traffic growth were taken into account.

How Significance is Determined

The significance of impacts, particularly environmental impacts (*e.g.* severance, pedestrian amenity, fear and intimidation as a result of the proximity of vehicles to pedestrians, and visual impacts), are all, to a degree subjective. Determination of significance is therefore based on expert judgement taking into account a number of factors relating to the sensitivity of the receiving environment, as well as impact magnitude. In this context, sensitive receptors are land uses which will generate a high number of vulnerable road users (*i.e.* significant housing, schools or hospitals).

Project Impacts and Mitigation Measures

Changes in personnel numbers at Wylfa will mean that traffic levels associated with the site will change following the end of electricity generation. The numbers (and type) of personnel will change to reflect the different activities being undertaken on the site. A few years after shutdown, not all of the current contingency of permanent staff will be required but additional contractors will be employed for the new construction- and demolition-type work being carried out.

During the Care and Maintenance Preparations phase of the decommissioning process, the total level of traffic generated by Wylfa Power Station is predicted to be slightly lower than during the baseline year 2007 and the number of HGVs is likely to increase.

The traffic environmental impact assessment identified that the A5025 both north and south of the power station will both experience a 'significant' adverse safety impact due to the decommissioning process in 2015. The A5025 south of the station will experience a key significant environmental impact (environmental impacts can include severance, pedestrian amenity, fear and intimidation as a result of the proximity of vehicles to pedestrians and visual impacts).

No specific mitigation is proposed because the total traffic levels on these roads are predicted to be at a similar level or lower than those in 2007. In the case of the A5025, although a 'moderate' impact magnitude has been identified for a short period of time, the total change on these routes is 280 and 306 vehicles to the north and south respectively and these will be spread throughout the working day. The routes benefit from accident records below the national averages, therefore it is not considered necessary to implement specific mitigation measures on these roads.

Although in terms of environmental impacts the flow changes on the A5025 to the south are predicted to be slight, due to the low number of existing HGV movements an additional 38 HGVs being routed along this link on a daily basis result in a 'key significant' impact. Due to the existing standard of the road and that the route benefits from accident records at or below the national average, and the changes in flows being so low, it is not considered necessary to implement specific mitigation measures on this road in order to accommodate an additional 38 HGV movements.

Although specific measures on each of the routes mentioned above are not proposed, a Travel Plan (historically known as a Green Travel Plan) is proposed which will assist to reduce the number of trips generated by the station throughout the decommissioning process and this should reduce the number of vehicle movements during the Care and Maintenance Preparations phase.

During Care and Maintenance there will be very little traffic travelling to and from Wylfa power station and traffic levels on the highway network will be lower with the decommissioning process taking place than if decommissioning did not take place, leading to a significant positive impact on the operation and safety of the A5025 north and south of the site.

As for the Care and Maintenance Preparations period, within the Final Site Clearance phase the A5025 to the south of the site is expected to incur key significant environmental impacts. For the reasons given above for Care and Maintenance Preparations, a Travel Plan is proposed for Final Site Clearance which should reduce the number of vehicle movements generated by the station. It is not deemed necessary to implement any specific mitigation measures to reduce the impact.

The traffic associated with the demolition and construction activity that will arise from the decommissioning process will lead to the increased likelihood of mud on the routes used by HGVs when travelling to and from the site. This has both safety and environmental impacts which, in the absence of mitigation, may be significant. However, if necessary, this will be largely alleviated through wheel washing before the HGVs leave the site. Residual safety and environmental impacts associated with mud are considered 'not significant'.

Following Final Site Clearance, there will be no vehicles travelling to and from the Wylfa site. There will be 'significant' beneficial impacts on both A5025 links. No significant environmental impact is expected to occur on any sections of the highway network considered as a result of the decommissioning process.

Further information on traffic and transport can be found in Part Two, Section 18 of the main statement.

Table NTS.1: Table of Summary of Mitigation Measures Proposed Against Significant and Key Significant Adverse Impacts

Impact	Mitigation Measures
Air Quality	
The impact of dust on residential properties from soiled vehicles or vehicles carrying potentially dusty loads.	<ul style="list-style-type: none"> • Ensuring that dusty materials are transported appropriately (e.g. sheeting of vehicles carrying spoil and other dusty materials); • Regular cleaning of the site entrance; and • Provision of wheel and vehicle body washing as appropriate.
The impact of dust on residential properties, industrial receptors, and public areas (due to routine on-site decommissioning activities e.g. construction, demolition and the handling of waste/materials) has not been assessed as ‘significant’ or ‘key significant’, however the mitigation measures opposite will be used, as appropriate, as measures of best practice.	<ul style="list-style-type: none"> • Use of water sprays during external demolition activities as appropriate. • Use of water sprays during outside infill operations as appropriate. • Avoidance of vehicular use on un-surfaced ground where possible and limits on vehicle speeds on such surfaces where it cannot be avoided. • On-site roads to be regularly cleaned of mud/dust deposits and sheeting of vehicles carrying potentially dusty loads, as appropriate and as far as practicable. • Minimisation of dust during particularly windy or dry conditions will be achieved by a variety of activities e.g. the use of water sprays. • Minimisation of unnecessary material and waste handling as far as practicable. • Use of water sprays to maintain damp surfaces during dry and windy weather. • Minimisation of dust from stockpiles will be achieved by a variety of techniques which may include sheeting of surfaces and/or use of wind fences etc as appropriate. • Minimisation of dust will be achieved by a variety of techniques which may include the covering of containers and/or use of wind fences as appropriate.
Archaeology	
Certain features of the historic landscape have the potential to have survived the disturbance of construction within the immediate vicinity of the power station, in the area of car-parking and overflow car-parking between Porth y Pistyll and Porth y Gwartheg and in the vicinity of	<ul style="list-style-type: none"> • A walkover survey to identify any surface evidence of previous occupation and land use, including agricultural, industrial, maritime and wartime operations within this area, will be undertaken prior to commencing any decommissioning works which might involve ground disturbance in the vicinity of the power station, in the area of car-parking and overflow car-parking between Porth y Pistyll and Porth y Gwartheg and in the vicinity of the outflow at Porth Wnal and within the wider curtilage of the NDA land holding.

Impact	Mitigation Measures
the outflow at Porth Wnal and within the wider curtilage of the NDA land holding.	
Ecology	
Disturbance to or loss of small amounts of coastal cliff grassland and strandline vegetation by use of Laydown Areas 1 and 2.	<ul style="list-style-type: none"> • Use of a buffer strip in Laydown Area 2 and restricting Laydown Area 1 to within the security fence.
Loss of or disturbance to habitat of moderate botanical interest in Laydown Area 2.	<ul style="list-style-type: none"> • Marking off a 2m-wide buffer strip by a fence or a hedge of native species of local provenance to prevent incursion by personnel and vehicles.
Disruption of the adjacent cliff habitat complexes by fragmentation of the coastal wildlife corridor due to extension of Laydown Area 1 on to the cliff.	<ul style="list-style-type: none"> • No part of Laydown Area 1 to extend outside the security fence.
Potential degradation of species-rich vegetation on the AONB and Heritage Coast and in the Tre'r Gof SSSI caused by deposition of dust generated from demolition activities on site.	<ul style="list-style-type: none"> • Control of dust with standard dust suppression technologies including use of water (see air quality above and Section 10 (Air Quality and Dust).
Accidental killing of adders during demolition of the towns water tank.	<ul style="list-style-type: none"> • Reptile-proof fencing around work area and removal of reptiles from within. • Strimming areas suitable for adders to discourage occupation. • Re-instate suitable adder habitat on the footprint of the former towns water tank.
Disturbance to bird species from construction of a coffer dam, demolition	<ul style="list-style-type: none"> • Explosive demolition to occur outside of breeding and passage seasons (March – September).

Impact	Mitigation Measures
of the outfall gatehouse complex and explosive demolition of the offshore structures.	
Loss of habitat and increased disturbance could cause severe disruption to the gull colony in Laydown Area 1.	<ul style="list-style-type: none"> • Restrict Laydown Area 1 to within the outer security fence.
Potential loss of habitat and or buildings could impact breeding birds.	<ul style="list-style-type: none"> • All suitable nesting habitat to be removed outside of the bird breeding season, or if not possible then nest sites to be checked by a qualified ecologist and works to be suspended if birds are breeding. Buildings supporting nesting birds to be demolished outside bird breeding season.
The loss of Building 99 which supports a roost of common pipistrelle bats and the loss of other buildings with moderate or high potential to support roosting bats and subsequent loss of potential and actual roost sites.	<ul style="list-style-type: none"> • All such buildings to be surveyed for roosts approx. 2 years before demolition; mitigation for found roosts to be agreed and licensed by CCW. In buildings where no bats are found, demolition to be carried out under a ‘watching brief’ supervised by a suitably qualified and experienced ecologist. • Roosts suitable for summer and winter use to be provided prior to any demolition works commencing, and as agreed by CCW. • Demolition under EPS licence guaranteeing safe exclusion and provision of alternative roost site.
Disturbance to foraging bats from light spill.	<ul style="list-style-type: none"> • After-dark working will be minimised and confined to winter; directional lighting will be used.
Disturbance to cetaceans and grey seals from explosive demolition of the CW jetty and offshore structures.	<ul style="list-style-type: none"> • Explosive demolition to occur at low tide. • Dedicated observer to ensure that no cetaceans have been seen in the area at least 30 minutes prior to demolition.
Geology, Hydrogeology and Soils	
Changes in soil and/or groundwater	<ul style="list-style-type: none"> • Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS

Impact	Mitigation Measures
quality due to creation of new contaminant pathways (e.g. due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).	<p>10175 (Investigation of Potentially Contaminated Sites – Code of Practice).</p> <ul style="list-style-type: none"> • Compliance with EA Technical Report P5-065/TR (Technical Aspects of Site Investigation). • 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 avoid groundwater flow issues. • Placement of flow barriers and monitoring of level and flow pattern impacts as required.
Changes in soil and/or 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 PPG2 and PPG6 and Oil Storage Regulations 2001. • 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.
Changes in soil and/or groundwater quality due to inadvertent contamination of soils and/or groundwater arising from inappropriate use of contaminated soils, wastes or materials as infill.	<ul style="list-style-type: none"> • Sampling and testing of potentially contaminated soils, wastes and materials prior to use as appropriate. • Authorised disposal or on site treatment of unsuitable soils, wastes and materials. • Use of Site Waste Management Plans (SWMP).
Changes in soil and/or groundwater quality due to inadvertent or uncontrolled disturbance or spreading of existing contaminated soils, including movement by windblown dust, attachment to vehicles, entrainment in runoff and inappropriate soil storage/handling operations.	<ul style="list-style-type: none"> • Desk studies and site investigation, monitoring and remediation 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. • Compliance with relevant PPG's (i.e. PPG 2, 6, 11 and 21 as appropriate). • See dust control mitigation measures (air quality and dust above and Section 10) including, if necessary, use of water sprays with appropriate management of wastewater arisings and on-site road cleaning.

Impact	Mitigation Measures
	<ul style="list-style-type: none"> • Use of re-circulating wheel washers on HGVs leaving site as appropriate. • See mitigation below under ‘Inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials’.
<p>Changes in soil and/or groundwater quality due to inadvertent contamination of soils and/or groundwater arising from temporary storage of contaminated soils, wastes or materials.</p>	<ul style="list-style-type: none"> • Sampling and testing of soils, wastes and materials prior to storage as appropriate. • On site sorting and segregation as appropriate. • Use of containment (e.g. membranes) to reduce likelihood of cross-contamination, as appropriate. • Management of rainwater run-off from storage areas for contaminated or potentially contaminated soil, wastes and materials. • Use of Site Waste Management Plan (SWMP).
<p>Changes in groundwater quality and/or flow caused by inadvertent effects on groundwater level, flow and quality due to the infill of deep basements and the breaching of basement structures to prevent ponding.</p>	<ul style="list-style-type: none"> • 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.
<p>Changes in groundwater quality and/or levels and flow due to mobilisation of existing contamination caused by changes in water table levels and consequential changes to groundwater flow regime.</p>	<ul style="list-style-type: none"> • Desk studies and site investigation to determine groundwater levels, flows and characterise the full extent of any contamination. • Dewatering of affected areas 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. • The selection of infill materials with appropriate physical and chemical properties.
<p>The degradation of construction materials due to high levels of sulphate in soil or groundwater.</p>	<ul style="list-style-type: none"> • Sulphate testing will be carried out in area where concrete is to be placed. The appropriate grade of concrete will be selected in accordance with BRE Special Digest 1 (Reference 12 in Section 13). • Prior to construction of individual scheme elements, detailed geo-environmental

Impact	Mitigation Measures
	investigations will be undertaken in order to inform the construction methodologies and to take into account any site specific contamination and geotechnical constraints.
Landscape and Visual	
Impacts on local views.	<ul style="list-style-type: none"> • Use of directional lighting.
Noise and Vibration	
General changes to noise directly from the site and associated changes in traffic.	<ul style="list-style-type: none"> • Use of equipment fitted with effective silencers. • Designated 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. • Compliance with BS5228.
Socio Economic	
Employment opportunities and unemployment level in study area.	<ul style="list-style-type: none"> • Magnox Electric will make every effort to re-deploy affected staff and support staff in re-training or re-skilling for decommissioning roles. • Magnox Electric will encourage its contractors to make use of local labour, equipment & services wherever possible. • During Final Site Clearance there are potential opportunities for training the unemployed to take up opportunities subject to skills needs over the longer term.
Surface Waters	
Changes in terrestrial and coastal water quality due to release of sediment laden run off from construction, demolition and traffic movements.	<p>Where necessary:</p> <ul style="list-style-type: none"> • wetting down to prevent wind blown spread of dust into locations where subsequent washing into surface drains would be likely; • careful design and siting of spoil mounds, this may include the construction of low walls around spoil areas; • sheeting or seeding of long term soil mounds; • the use of sediment barriers to contain run off within areas;

Impact	Mitigation Measures
	<ul style="list-style-type: none"> • measures to keep on and off site roads free of sediment, including the use of recirculating wheel washers and road cleaners; • the use of sustainable drainage concepts to control the sediment content of surface water drainage within and not contained within drainage systems; • prevent water from entering excavations by using cut off ditches; and • ensure that there is provision for dealing with silty water, this may include on site settlement lagoons or arrangements to take silt laden water off site.
Changes in terrestrial and coastal water quality due to minor spills or leaks of non-radioactive substances.	<ul style="list-style-type: none"> • Compliance with relevant environment agency Pollution Prevention Guidance, including that on the siting of chemical/fuel storage facilities, use of bunding, handling protocols and spill response plans (e.g. PPG2; PPG5; PPG6; PPG11 & PPG21).
Traffic and Transport	
Impacts on operation and safety and environment of A5025.	<ul style="list-style-type: none"> • No specific mitigation is proposed due to the existing standard of the A5025, the route benefiting from accident records at or below the national average and because the changes in traffic flows are low. However, a Travel Plan will be implemented which will assist in reducing the number of trips generated by the station. This plan will be discussed in advance with the relevant highway authority.
Impacts on safety <i>etc.</i> due to mud on roads.	<ul style="list-style-type: none"> • Wheel washing of HGVs as necessary.

Residual Impacts

With mitigation measures in place the only key significant adverse environmental impacts identified as a result of the assessment were:

- visual impact on two Area of Outstanding Natural Beauty (AONB) views as a result of dismantling works and re-cladding and modification works to the reactor building during Care and Maintenance Preparations and demolition works during Final Site Clearance.

With mitigation measures in place the only significant adverse environmental impacts identified as a result of the assessment were:

- visual impacts on local and middle distance views and one open access land view as a result of views of decommissioning works during Care and Maintenance Preparations and Final Site Clearance, with corresponding significant adverse impacts on landscape character;
- potential worst case noise impacts at nearby residential properties during Care and Maintenance Preparations and Final Site Clearance (dependent on working methods and the effectiveness of mitigation);
- the permanent long term loss of employment opportunities in the sub area containing the site, known as Anglesey North, that will occur by the end of the Care and Maintenance Preparations, with associated short term impacts on the levels of unemployment; and
- possible impact to local road network due to increase in traffic flows. (With a Traffic Plan proposed as mitigation it is not possible to identify the residual impact following its implementation and therefore at worst the residual impact could be 'significant').

The significant benefits identified were:

- overwhelmingly beneficial visual impacts to local and middle distance views throughout the area with corresponding benefits to landscape character;
- the generation of employment for the immediate cluster of wards for almost a decade during Final Site Clearance;
- impacts on surface water quality due to the end of all site discharges and the complete removal of the need for any discharge consents from the site;
- impacts on soil and groundwater quality from the completion of any remediation of contaminated ground during Care and Maintenance Preparations; and
- following Final Site Clearance there will be no traffic travelling to Wylfa Power Station which will be positive in terms of the operation and safety of roads.

As a result of decommissioning the following key significant benefits were identified:

- impacts on soil and groundwater quality from the completion of the remediation of contaminated ground on the basis that all restrictions

- including monitoring, reporting and regulation would cease, and no further remediation would foreseeably be required; and
- views of the site from sensitive viewpoints such as the Isle of Anglesey Area of Outstanding Natural Beauty (AONB), following the phased removal of the very substantial mass of the buildings and cessation of station lighting at night.

It is considered that the project to decommission Wylfa Power Station is unlikely to have any key significant or significant effects on the environment in another EEA State.

How Do I Comment on the Environmental Statement?

If you wish make any comment on the proposals in this NTS or the environmental statement itself then you should do so in writing to the address below:

EIA Project Officer
Health and Safety Executive
EIAD Team
Building 4S.1 Redgrave Court
Merton Road
Bootle
L20 7HS

Availability of Environmental Statements

Copies of the full Environmental Statement can be obtained from:

Document Centre
Magnox Electric Ltd
Wylfa Power Station
Cemaes Bay
Isle of Anglesey
LL67 0DH

The cost of a hard copy of this document is £50. Alternatively, electronic copies of this environmental statement are available on CD free of charge from the address above.

Copies of the non-technical summary are also available free of charge from the address above or can be viewed on the Magnox Electric Ltd website www.magnoxelectric.com .

Where Can I View the Complete Environmental Statement?

Copies of the complete environmental statement can be viewed free of charge at the following locations:

HSE Library and Information Centres

Health and Safety Executive

Redgrave Court Information
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Redgrave Court
Merton Road
Bootle
L20 7HS

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Unit 7 & 8, Edison Court
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Tel (01248) 752095

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Wood Street
Menai Bridge
LL59 5AS
Tel (01248) 712706

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Moelfre
LL72 8HA
Tel (01248) 410331

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Pavilion Road
Caernarfon
LL55 1AS
Tel (01286) 679463

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LL64 5UX
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