Nuclear Restoration Services (NRS)

Wylfa Site

Environmental Management Plan

Issue Thirteen

Published in the United Kingdom by Magnox Ltd, Wylfa Site, Cemaes, Anglesey, LL67 0DH.

EXECUTIVE SUMMARY

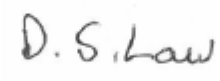
In August 2008, Magnox Ltd applied to the Health and Safety Executive (HSE) for consent to decommission Wylfa Site in accordance with the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended). An environmental statement accompanied the application.

After a period of public consultation, the HSE duly granted consent in March 2009. This original consent was valid until 25th March 2014, however, Wylfa has had permission to generate beyond this date, so it was necessary to seek a new consent to decommission. Consequently, a new application, including an updated Environmental Statement, was made and a further consent was granted in September 2013. Conditions were attached to the consents. Condition 5a included the requirement for the production and maintenance of an Environmental Management Plan covering the ongoing mitigation measures to prevent, reduce and, if possible, offset any significant adverse environmental effects of the decommissioning work. Issue 13 of this document has been published following the review of the previous Wylfa Environmental Management Plan (EMP), the updated Environmental Statement and current operational plans for the site in accordance with the HSE Consent Condition 5a.

Wylfa ceased generation at 3pm on the 30 December 2015. Both reactors have been permanently shut down and decommissioning has officially begun. Defueling has now completed, and the site has transitioned from Defueling to Care and Maintenance Preparations.

The revised decommissioning strategy, which defers some work to final site clearance, has been discussed with the regulators but still requires full agreement.

As Site Director for Wylfa, I continue to plan responsibly for a successful decommissioning project and on behalf of Nuclear Restoration Services I give my commitment to minimising any adverse effect on the environment as a consequence of our decommissioning operations.



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Stuart Law
Wylfa Site Director
December 2024

Contents .....

1. Introduction

Wylfa generated electricity beyond its original shutdown date of December 2010[1] until 3pm on the 30 December 2015. Due to the extension in generation, there was a requirement to seek a new[2] Consent to decommission under the Nuclear Reactors (Environmental Impact Assessment for Decommissioning Regulations 1999 ((as amended) (EIADR99)). Now both reactors have been permanently shut down and the site has fully defueled in accordance with Government Policy, Wylfa has entered the decommissioning phase and work has begun to systematically remove (or decommission) the plant and buildings associated with electricity generation at the site. Prior to commencing this work Magnox Ltd, the Licensee of the site, was legally required to seek consent from the Health and Safety Executive (HSE) to carry out the decommissioning project.

A new application was therefore made in August 2013 to the Health and Safety Executive now the Office of Nuclear regulation (ONR) for consent to carry out the decommissioning project at Wylfa. In support of this application an updated Environmental Statement[3,4,5] was provided, which assessed the impacts of the decommissioning project on the environment. Following another extensive public consultation, the HSE granted further consent to carry out the decommissioning project at Wylfa in September 2013, subject to certain conditions. (The conditions are listed in full in Appendix 1).

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

- *list the mitigation measures that are already identified in the environmental statement;*
- *list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future and;*
- *list the work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future.”*

It is a requirement of the conditions attached to the consent to describe the effectiveness of the mitigation measures over time. This EMP is therefore a living document that will be periodically reviewed and revised throughout the decommissioning project.

Further information on the HSE’s decision to grant consent to decommission Wylfa can be found in their decision report, which describes the content of the conditions attached to the Consent and the main reasons and considerations for the decision.

Copies of the decision report document are available from:

Health and Safety Executive
Knowledge Centre
Health and Safety Executive
(1G) Redgrave Court
Merton Road
Bootle
L20 7HS

[1] Agreed by the Department for Energy and Climate Change (DECC) and the HSE HM Nuclear Installations Inspectorate in October 2010.
[2] The original consent to decommission was granted in 2008, and was valid until March 2014.
[3] European Council Directive 85/337/EEC, as amended by Council Directive 97/11/EC, sets out a framework for the assessment of the effects of certain public and private projects on the environment. The Directive is implemented in Great Britain for decommissioning nuclear reactor projects by the Nuclear Reactors (Environmental Impact Assessment for Decommissioning) Regulations 1999 (as amended).
[4] Magnox North (2008) Wylfa Nuclear Power Station Environmental Statement (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).
[5] Magnox, Wylfa Nuclear Power Station, Environmental Statement 2013 Update.

HSE Infoline 0300 003 1747

Website: www.hse.gov.uk

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

The Communications Team
Wylfa Site
Cemaes
Anglesey
LL67 0DH

In addition to the submission of this EMP to the HSE, Nuclear Restoration Services will also make copies available on line and upon request to the:

- Wylfa Site Stakeholder Group;
- The Nuclear Decommissioning Authority (NDA);
- Isle of Anglesey County Council;
- Natural Resources Wales; and
- Environment Agency.

N.B. Magnox Ltd. rebranded 31st October 2023 to Nuclear Restoration Services (NRS)

This EMP can be viewed at the following locations:

Amlwch Library Lôn Parys Amlwch LL68 9EA Tel (01407) 830145	**Beaumaris Library** David Hughes Community Centre Beaumaris LL58 8AL Tel (01248) 810659
Bangor Public Library Ffordd Gwynedd Bangor Gwynedd LL57 1DR Tel (01248) 353479	**Holyhead Library** Market Hall Stanley Street Holyhead LL65 1HG Tel (01407) 762917
Llangefni Library Lôn y Felin Llangefni LL77 7RT Tel (01248) 752095	**Menai Bridge Library** Wood Street Menai Bridge LL59 5AS Tel (01248) 712706
Caernarfon Library Pavilion Road Caernarfon LL55 1AS Tel (01286) 679463	**Rhosneigr Library** High Street Rhosneigr LL64 5UX Tel (01407) 811293

2. Scope of the Environmental Management Plan

This EMP details the mitigation measures to prevent, reduce and where possible offset any significant adverse effects on the environment throughout the decommissioning of Wylfa. The decommissioning project at Wylfa is divided into three phases as follows:

- Care and Maintenance Preparations (C&MP);
- Care and Maintenance (C&M); and
- Final Site Clearance (FSC).

These phases are explained in Box 1 Summary of the Main Decommissioning Phases.

This EMP is similarly structured around these three phases; this is predominantly because mitigation measures may change in the future in light of experience and developing technologies. Where mitigation measures are still to be developed in more detail, or require changes, these will be described in subsequent issues of the EMP together with the reasons for any changes made.

The environmental impacts and mitigation measures associated with decommissioning were grouped in the Environmental Statement according to the topic area e.g. air quality, ecology etc. Reference to these same topic areas and associated mitigation measures will continue in this EMP (see Box 2 Environmental Assessment Topics).

Box 1 Summary of the Main Decommissioning Phases

- **Care and Maintenance Preparations** is the first phase of decommissioning and is estimated to take in excess of 10 years. During this phase most of the radioactive and non-radioactive plant and buildings on the site (other than the reactor building and possibly dry store cells 4 & 5) will be dismantled and cleared.
- **Care and Maintenance** is the second phase of decommissioning which could potentially last for some decades, during which no significant dismantling will be carried out. The site will continue to be managed, monitored and maintained.
- **Final Site Clearance** is the last phase and is expected to take less than 10 years. This involves the dismantling of the remaining structures on the site, including the reactors and the clearance of any residual radioactivity to the applicable standard.

Box 2 Environmental Assessment Topics

- Air Quality and Dust;
- Archaeology and Cultural Heritage;
- Ecology;
- Geology, Hydrogeology and Soils;
- Landscape and Visual;
- Noise and Vibration;
- Socio-Economic;
- Surface Waters; and
- Traffic and Transport.

In addition to the mitigation measures, a brief description of the Wylfa site and its surroundings is presented in this EMP together with an overview of the types of operations that will be carried out during Care and Maintenance Preparations (the first phase of decommissioning when most of the demolition works will take place). Further details for all phases of the decommissioning project at Wylfa are presented in the Environmental Statement.

3. Stakeholder Engagement

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

As well as regular meetings with stakeholders, where appropriate, other interested parties will also be kept informed of specific decommissioning activities. Some examples of additional stakeholder activities carried out to date are shown in Box 4 Examples of Additional Stakeholder Activities.

Box 3 Local Stakeholders

- Wyfa Site Stakeholder Group;
- Isle of Anglesey County Council;
- Natural Resources Wales;
- Environment Agency;
- Horizon Nuclear Power; and
- Local people, businesses and community groups.

Box 4 Examples of Additional Stakeholder Activities (During Original 2008 Consultation)

- Liaising with the Countryside Council for Wales (now NRW) regarding mitigation measures proposed for bats;
- Business breakfast held with local stakeholders;
- Information day held at site to inform local people about the decommissioning plans; and
- Display at the Anglesey County Show.

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

The Energy Act (2004) requires that the NDA must prepare a strategy for carrying out its functions and from time to time to review that strategy. This strategy must set out the steps that the NDA proposes to take for:

- *"giving appropriate publicity to its responsibilities and strategy;*
- *explaining them both to persons having a particular interest in matters relating to the carrying out by the NDA of its functions and to the general public;*
- *ensuring that the NDA is kept informed at all times of the opinions about such matters of persons having such a particular interest; and*
- *facilitating the communication by such persons of their opinions to the NDA."*

The NDA is also required to give encouragement and other support to activities that benefit the social or economic life of communities living near those sites for which it has responsibilities, including Wylfa.

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

4. The Site and Surrounding Area

4.1. Site Description

Wylfa was the second and final Magnox power station to be built with a pre-stressed concrete pressure vessel. Construction began in 1963 and commercial operation commenced in 1971. Its twin reactors and associated turbogenerators had a generating capacity of up to 980 megawatts (electrical) [MW(e)].

The reactor building contains two reactors housed in a combined single building, which are of the gas cooled, graphite moderated 'Magnox' type. Each reactor is enclosed in a pre-stressed, post tensioned, 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 (until defueling was completed), also contained within the pressure vessel is graphite, control equipment (including control rods and associated mechanisms), equipment used for monitoring (e.g.

temperatures, pressures, neutron flux) and the boilers, which are arranged around the reactor core.

A significant difference between Wylfa power station and other Magnox-type stations is that Wylfa used five dry storage cells (DSCs) for cooling spent fuel (other Magnox sites store spent fuel in cooling ponds). The three primary DSCs (1, 2 and 3) can hold about 6500 fuel elements each while the secondary DSCs (4 and 5) are a later addition and can hold about 29000 fuel elements each. All DSCs are now defueled, and the associated Primary (Flask Filling Area – FFA) and Secondary (Diverse Discharge Route -DDR) fuel discharge routes and equipment are redundant.

The conventional part of the site contains mostly non-radioactive plant and buildings. Of these, the most substantial structure is the turbine hall which dominates the eastern side of the site and is approximately 270m long by 45m wide. Including ancillary buildings, the total width is some 76m.

Within the turbine hall are four turbo-generator units each of which, when the station was generating, received incoming steam and rotated 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 passed cooling water that was used to complete the conversion of steam to water before it was transferred back to the reactor vessel.

Wylfa's cooling water was pumped from the Irish Sea using pumps contained within the cooling water (CW) pump house. This structure incorporates not only the CW pumps but also screens and other equipment, the purpose of which was to prevent marine organisms and debris from entering the cooling water circuit. Since cessation of generation cooling water is no longer required and the pumps have been shut down.

4.2. Surrounding Landscape

Wylfa is located in the northwest of Wales, on the northern tip of the Isle of Anglesey between Cemlyn Bay and Cemaes Bay. The power station lies approximately 2 km west of Cemaes village and 27 km northeast of the town of Holyhead.

The nuclear licensed site at Wylfa covers approximately 21 hectares. The NDA landholding associated with Wylfa is 113ha (predominantly farmland), and the land outside of the licensed site was initially leased to Horizon for the proposed new nuclear power station, "Wylfa Newydd" (this project is currently on hold). This land has now been sold to Great British Nuclear for subsequent development of new build.

The impact of the land sale was assessed in the 2013 Environmental Statement and was considered to have no significant impact with respect to Wylfa's decommissioning project, however, any cumulative impacts associated with the construction of the new station will be assessed and a collaborative approach will be sought where practicable for mitigating any such impacts.

The power station is bounded to the north, northeast, and northwest by the Irish Sea and to the southeast, south, and southwest by agricultural fields. The coast around the power station comprises rocky headlands with small bays, some of which are sandy. The approximate length of the coastline of the entire landholding is about 2km.

The stretch immediately adjacent to the nuclear licensed site is approximately 750m. 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, the latter mostly planted.

Photograph 1 - Aerial View of the Wylfa Site and Surrounding Landscape

4.3. Transport Infrastructure

The main vehicular route to and from Wylfa power station site is the A5025 which connects the site to Valley (which lies on the A5) and the A55, approximately 20 km to the south. To the east, the A5025 connects the power station to Cemaes village 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.

Rail facilities for the transport of bulk materials between the mainland and Anglesey are good. The principal rail route is the North Wales coastline, which links the region to Chester and London. The nearest railhead to Wylfa for passengers and freight is at Valley.

There are railway sidings at Valley which were used for the transfer of the spent fuel flasks onto the flat rolls for shipment via rail to the Sellafield reprocessing plant. Use of rail-based transport requires road transport between the site and the railway station (approximately 20 km).

The principal ferry port in the region is Holyhead, through which large volumes of freight and passenger traffic pass. The use of water-based transport would require road transport between the site and the port (approximately 27 km).

4.4. Local Watercourses

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 was abstracted for use as cooling water on the site prior to being discharged back to the sea.

There are no significant surface fresh watercourses at or within the immediate area of the Wylfa site. The nearest fresh watercourse 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, in 2013 this was assigned as being of ‘good ecological quality’.

Formerly there were two small watercourses, one to Porth Wnal and a second west of the former farm of Galen Ddu, both of which were removed during construction of the station. Currently there is a small intermittent stream to the south of the site, which draws on shallow water within the superficial deposits, in 2013 this was assigned as being of ‘moderate ecological quality’. There are also a number of small springs and drainage ditches feeding Tre’r Gof SSSI located to the north-east of the station.

There are two major reservoirs on Anglesey which are managed by Dŵr Cymru/ Welsh Water and provide drinking water to local populations: Llyn Alaw lies 7.3km to the south-south-east of Wylfa power station and Llyn Cefni lies 20.9km to the south-south-east.

4.5. Geology and Hydrogeology

Topsoil in the Wylfa area comprises a freely drained sandy loam that is poorly developed and generally thin at between 0.05 m to 0.4 m. This is underlain by a variable thickness of glacial till (generally less than 2m), which becomes discontinuous towards the coast.

Ground conditions are uniform over the proximity of the power station with generally strong Pre-Cambrian metamorphic bedrock of the Mona Complex overlain by a varying thickness of superficial glacial drift. The glacial drift within parts of the site was removed for construction of the power station, and significant excavations (by blasting) into bedrock were also required.

The bedrock provided particularly favourable foundation conditions for the major structures. During the construction of the site, two level platforms were created which involved the removal of both drift and rock from the eastern area of the site and deposition of this excavated material along the western area of the site and as the landscaped mounds to the east.

There are no significant aquifers beneath the site. This part of North Wales is 'de-regulated' with respect to groundwater, so there is no requirement for groundwater abstraction licences.

4.6. Sensitivity of the Receiving Environment

The nearest settlements to the site are Tregele village 1 km to the south-west and Cemaes village 2 km to the south-east of the site. The closest town above 10,000 inhabitants is Holyhead which is approximately 27 km from the station while the small town of Amlwch is located about 9 km to the east of the station.

There are sites of international, national and local conservation importance within the vicinity of Wylfa. The following are statutory designated sites within 5 km and non-statutory sites within 2 km of the licensed site boundary designated for their nature conservation importance:

- Anglesey Terns Special Protection Area (SPA)
- North Anglesey Marine Special Area of Conservation (SAC)
- Henborth Site of Special Scientific Interest (SSSI);
- Tre'r Gof (SSSI);
- Cemlyn Bay (SSSI);
- Cae Gwyn (SSSI);
- Llanbadrig – Dinas Gynfor (SSSI);
- Llyn Llygeirian (SSSI);
- Salbri (SSSI);
- The Skerries (SSSI):
- Llyn Hafodol and Cors Clegyrog (SSSI);
- Ynys Mon / Anglesey Area of Outstanding National Beauty (AONB); and
- Mynydd y Wylfa Local Nature Reserve (LNR).

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. There are no Listed Buildings within the immediate area. There are three Grade II Listed Buildings 1km south-west of the power station, these relate to the operation of Cafnan Mill and include a corn drying house at Felin Cafnan, a corn mill at Felin Cafnan and a mill house at Felin Cafnan.

Additionally, evidence was found in late 2015 indicating the presence of a Roman Fortlet on farmland near Cemlyn Bay (away from the power station site).

5. Site Management and Decommissioning

5.1. General Site Management

Hours of Work

Wylfa site transitioned to a four-day working week on 3rd July 2023. The Wylfa Site opening hours are now from 07:00 to 18:30, Monday to Thursday with 'silent hours' typically from 19:00 to 06:30 with the site closed Friday to Monday. The typical normal working week is 37 hours per week, Monday to Thursday 07:15 to 17:00. The Wylfa site term contractors have also aligned with the above working week arrangements.

This transition was informed by a comprehensive 'Environmental Risk Assessment' to ensure that all risks were considered and mitigated. It should be noted that the associated 'project baseline change assessment' concluded that there were no findings of significant effect (FONSE) to the environmental baseline as detailed in the Environmental Statement update 2013.

Most decommissioning work on site will be undertaken during these typical normal working hours under a single shift working arrangement, but this may alter for certain activities. For example, from time to time the working day may be extended and/or some night-time working may be required in order to complete specific items of work such as concrete pouring.

Seven days a week, 24 hours a day shift working may be necessary for retrieval of operational intermediate level waste (ILW) and for subsequent waste packaging operations. Isle of Anglesey County Council will be notified in advance of any potentially significant work outside of the normal Monday to Friday working hours and will be provided with a site contact in the event of any queries or complaints.

Lighting

The existing night-time illumination at the power station consists mainly of low level 'street' lights and some externally visible lights located in the reactor building and turbine hall.

During Care and Maintenance Preparations and Final Site Clearance, further lighting may be necessary at times. Use of such lighting, which would only normally be used at the start and end of the working day during the winter months, will be at the discretion of the relevant Site Supervisor. Consideration will be given to the use of directional lighting to minimise any light spill. Existing levels of security lighting will be retained.

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

Transport

Vehicle movements to and from Wylfa will be subject to the provisions of a Transport Management Plan (see Appendix 2). At present decommissioning activities have remained small scale and therfore not considered to have any significant impact on the local traffic management. A traffic

manangement plan may need to be implemented and agreed with the local authority ahead of large scale works, most likely to be triggered by the demolition of the turbine hall.

5.2. Decommissioning Methods

Conventional Area Decommissioning

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

The interior of buildings will be first de-planted and decontaminated as necessary prior to demolition of the buildings themselves. To facilitate this, large or heavy plant/equipment may be cut or split into components or sub-component parts prior to their removal. It is expected that after de-planting etc. is complete, demolition will be carried out using conventional methods.

The original plan was for all buildings to be demolished in their entirety, the structures including any cabling removed to ground level and the voids backfilled. However, a new strategy is being put in place whereby structures are to be removed to slab level with the majority of the voids being backfilled during final site clearance. Implementation of this new strategy is subject to Regulator agreement. Any remaining below ground building structures such as basements will be punctured to prevent 'ponding' (the accumulation of water).

Where deemed acceptable, suitable demolition material from conventional buildings will be retained on-site to be used for the purpose of constructing safe working areas and surfaces to facilitate the decommissioning mission.

Towards the end of Care and Maintenance Preparations, it was planned that all roads and hard standings will be punctured to assist the growth of vegetation and all drainage from rainfall will be to ground. However, under the new strategy, the surface water drainage network may be retained. The main road leading to the reactor building will be maintained.

Demolition of Radioactive Facilities

Radioactive plant in the reactor building will be decontaminated, where practicable, and dismantled. Other plant and equipment will be decontaminated in situ and recycled, also where practicable to do so.

Examples of these decontamination processes are shown in Box 5 Examples of Decontamination Techniques. Contamination control provisions will be applied (e.g. work will be done within temporary enclosures) and working procedures will take account of the requirement to minimise workers exposure to radiation to As Low as Reasonably Practicable (ALARP).

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

Box 5 Examples of Decontamination Techniques

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

Nuclear Restoration Services has proposed a strategy of risk based de-planting, where some plant may be left until final site clearance. This strategy has been discussed with regulators but still requires full agreement.

5.3. Waste Management

Intermediate Level Radioactive Waste (ILW)

The majority of operational ILW will be left in voids in the reactor building until Final Site Clearance. Some of the operational ILW will be retrieved and packaged during Care and Maintenance Preparations and stored on site in a radioactive waste storage facility until an off-site disposal route becomes available. It is currently planned that this will be a new purpose-built facility located in close proximity to the reactor equipment building (REB).

The number of packages to be produced during Care and Maintenance Preparations of operational ILW in the current baseline plan has recently been assessed as 10. The characterisation Project (Section 6.2) has successfully assessed the site's ILW inventory while also exploring co-packaging to minimise the number of packages required. This has reduced original assessments from 27 DCICs (Ductile Cast Iron Containers) to 10 DCICs with all round benefits for future storage and processing.

However, there is currently no National Repository for ILW in the UK. For ILW the long-term decay storage strategy is one of retrieval and packaging (except that stored in voids within the reactor building structure which can be considered to be adequately passively safe for the long-term) and storage on-site until such time as a geological disposal facility becomes available to receive it.

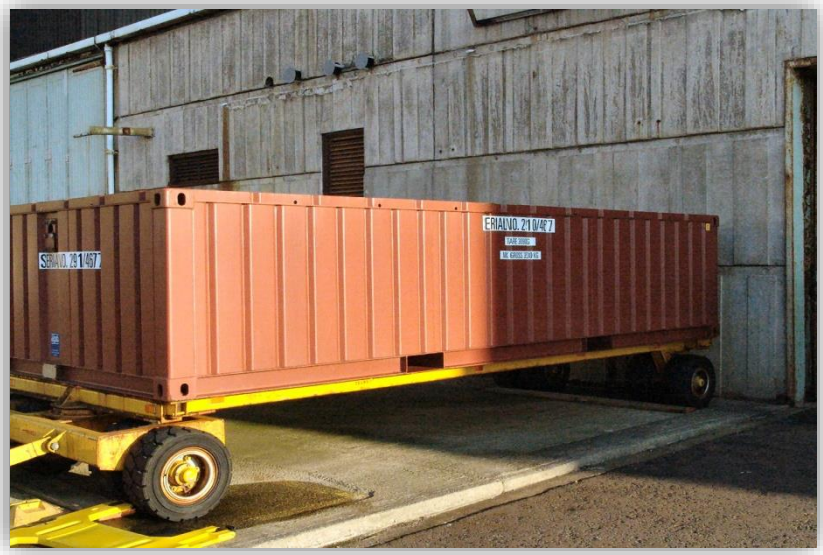
Low Level Radioactive Waste (LLW)

LLW routinely arises at nuclear power stations. Because of this, LLW management facilities already exist on site to process and package LLW before its transfer/disposal. Disposal from site used to be by transfer to the LLW Repository (LLWR) located near Drigg in Cumbria (see Photograph).

This is now minimised, but it is still the case for wastes which are not suitable for alternate disposal. Current alternate disposal routes include off-site incineration (Tradebe or Veolia) and metal recycling (Cyclife).

During Care and Maintenance Preparations the processing and disposal of such operational LLW to the LLWR will continue. More routes for the disposal of LLW will be utilised during decommissioning, in line with NDA strategy.

Liquid radioactive effluent requiring disposal is transferred to the Active Effluent Treatment Plant (AETP) for processing and disposal. Once production of this effluent ceases the AETP will be decommissioned. This will be completed prior to entering the C&M phase.



Photograph 2 - Example of a half-height ISO container awaiting transport from a Nuclear Restoration Services site to the LLW Repository

Non-radioactive Hazardous Wastes

All hazardous wastes will be disposed of via Nuclear Restoration Services approved, authorised contractors who hold the appropriate environmental permit, which will be checked for current validity before a contract is placed and implemented. The specific contractor used will depend on the type of waste requiring disposal. All records are auditable and will be checked regularly.

Asbestos

Safety during asbestos removal will focus on the hazards associated with manual handling and working at heights, in addition to the hazard of the asbestos itself. All work will be carried out in strict compliance with the Control of Asbestos Regulations 2012.

There are different methods adopted for the removal of asbestos dependent upon the type of asbestos being removed. Insulation containing asbestos will be removed under stringent safety conditions using specialist personnel working in tented areas subject to airlocks and a negative pressure air system. The tents will fully enclose the entire system being stripped of asbestos (see Photograph 3 which shows similar work carried out at Hinkley Point A power station).

The sealing of the tent around all areas will be smoke tested to ensure its integrity before asbestos removal commences. Full respirator and clothing change will be required for the removal; similar precautions to those sometimes used when working in radioactively contaminated areas. In addition, all asbestos lagging will be injected with a water solution prior to removal to reduce the number of airborne fibres released into the tent enclosure. The interior of the tented enclosure will be washed down to remove any fibres that have been released during the stripping process and this water will be filtered to remove any asbestos fibres. The filters will be disposed of along with the asbestos.

Non-radioactive asbestos will be double bagged in its wet state after stripping; hence there will be no liquid waste to be processed from the removal operation itself. Non-radioactive asbestos will be sent to off-site licensed asbestos disposal sites. Radioactive asbestos, which will be LLW, will be sent to a super-compaction facility, with the wastewater produced by this process being filtered to remove any asbestos fibres before the compacted asbestos is sent to the LLW repository near Drigg. Radioactive asbestos which can be characterised as very low-level radioactive waste (VLLW) can be disposed of to alternate suitably licensed disposal facilities.

Photograph 3 - Turbine Hall Asbestos removal at Hinkley Point A Site

Other Wastes

Non-radioactive ("Controlled") waste materials have arisen throughout the operating life of Wylfa. In general, the management of waste at Wylfa will aim to minimise the need to use landfill by reducing waste volumes wherever possible by following the hierarchy of waste management, i.e. eliminate, reduce, reuse, and recycle. Wylfa follows the Environmental Protection Act 1990 Duty of Care principles for all waste arisings and where waste is transferred, it is accompanied by a transfer note and a full written description of the wastes.

Scrap metals, glass and other suitable materials will be sent to an appropriate contractor for recycling. If it is not practicable to reuse or recycle any scrap materials, they will be disposed of via approved routes in accordance with the Duty of Care principles, principally landfill.

5.4. Radioactive Discharges and Emissions during Care and Maintenance Preparations

Radioactive disposals controlled under Environmental Permitting Regulations 2016 are subject to Permits and limits set by Natural Resources Wales. As required by the authorisations best available techniques are used to minimise radioactive discharges.

During Care and Maintenance Preparations (and Final Site Clearance), liquid radioactive waste sources will include wastewater from cutting operations, decontamination operations and showers. Currently all wastewater arising on site that has the potential to be radioactively contaminated is transferred to the Active Effluent Treatment Plant (AETP), which will be one of the last items of plant to be decommissioned during Care and Maintenance Preparations.

Where necessary, buildings and work areas with the potential for airborne radioactive contamination will have forced ventilation with exhaust air passing through high efficiency particulate filters as appropriate. The radioactive waste storage building is currently planned to be

ventilated by passive means - air in this building is expected to contain only traces of tritium (the radioactive form of hydrogen).

6. Environmental Performance

Future issues of this EMP will not only provide information on any decommissioning works that have been carried out since the previous submission of the EMP but will also contain details of decommissioning works planned for the coming year, the effectiveness of any mitigation employed to date, and a review of any changes required to the mitigation measures in respect to ecological changes at the site and/or experience gained.

Following completion of defueling and achieving fuel free verification in October 19 Wylfa has undergone transition to the Care and Maintenance Preparations phase of its lifecycle. This is the first stage of decommissioning and during this phase most of the radioactive and non-radioactive plant and buildings on site (other than the reactor building and possibly Secondary Dry Store Cells 4/5) will be dismantled and cleared.

Photograph–4 - Staff at Wylfa gather in front of the final flask of spent fuel to leave site (September 2019)

In March 2020, Wylfa successfully transitioned to the new post-defueling working arrangements, whereby 24-hour shift operations ceased, and site presence is now limited to Security personnel during ‘silent hours’ (typically 19:00 to 06:30). This transition and associated restructuring programme resulted in a number of staff reductions which were managed in accordance with the ‘socio-economic’ mitigation measures to support personnel to redeploy, re-skill or retire. The transition was also underpinned by a comprehensive ‘Environmental Risk Assessment’ to ensure all environmental impacts relating to this change were adequately considered and mitigated.

Over the last 12 months the site has continued to ensure that ‘environmental’ and ‘personnel’ (conventional) safety enablers have been delivered to support the safe and compliant delivery of physical demolition work. These enablers incorporate activities to reduce the ‘Hazards’ and ‘Waste’ on site, examples of which include the removal of unwanted ‘bulk’ and ‘residual’ oils and chemicals (Post Operational Clean Out – POCO) along with the removal of asbestos and waste from operationally redundant areas.

POCO projects to date have incorporated the removal of residual oil from storage tanks and pipework, F-gas from redundant refrigeration units and the draining of antifreeze from various

chiller units on site. The 'bulk storage' of legacy hazardous chemicals historically used during the generation phase have also been emptied and removed from site.

Following the cessation of generation and plant areas going cold there has been a noted deterioration of the integrity of insulation materials across site. Much of this insulation containing asbestos. As a result of this deterioration a major programme of risk based asbestos removal has commenced in advance of the original planned date. This work has continued during 2024 with a package of work to remove legacy asbestos in the Reactor Equipment Building being progressed.

Asbestos removal work will be an ongoing requirement to ensure all risks from asbestos are mitigated throughout each phase of the de-planting and demolition lifecycle. All asbestos work is carried out in strict adherence to the 'Control of Asbestos Regulations 2012' as detailed in section 5.

These hazard reduction activities are an essential first step to ensure demolition work can continue safely and without risk to the environment and personnel. Various POCO projects are planned to continue next year, reducing potential risks further.

Wylfa started physical building demolition in early 2022, and 'Project Plans' continue to advance demolition of redundant buildings with the aim of delivering this work successfully over the coming years. All projects recognise the requirement to minimize the risk of harm to the environment and have an embedded environmental advisor working closely with the Project Team. Potential impacts on EIADR compliance are specifically considered during the planning phase of each decommissioning project. This ensures that environmental risks are identified, and appropriate mitigations applied.

Company procedures also ensure that decommissioning activities are carried out in accordance with the requirements of this EMP. All changes to the configuration of plant and systems are assessed during the proposal stage against these requirements and where appropriate mitigations are put in place to prevent any impacts identified.

These procedures are embedded in the site's integrated management system which is certified to ISO9001 (Quality Assurance), ISO 14001(Environmental Management) and ISO 45001(Occupational Health and Safety). In addition, where there is the potential for an activity to produce significant discharges or disposals, either radioactive or non-radioactive, the site undertakes 'Best Available Techniques (BAT)' studies to demonstrate that impacts are minimized through evaluation by a clear and systematic process.

Last year's EMP (Issue Twelve) gives detail of work completed to the end of 2023 and also gives historical context to the work described in the subsequent sections. It can therefore be consulted to aid appreciation should it be required.

A summary of progress and examples of decommissioning work carried out in 2024 and 'Planned Projects' for 2025 are as outlined as follows:

6.1 Infrastructure Improvements

The installation of a smaller, simpler electrical supply to site (Electrical Overlay System - EOS) capable of delivering the future electrical needs for C&MP and C&M is underway.

This alternate electrical supply will allow the removal of historical complex systems and their associated oil filled transformers, thus delivering environmental benefits for site.

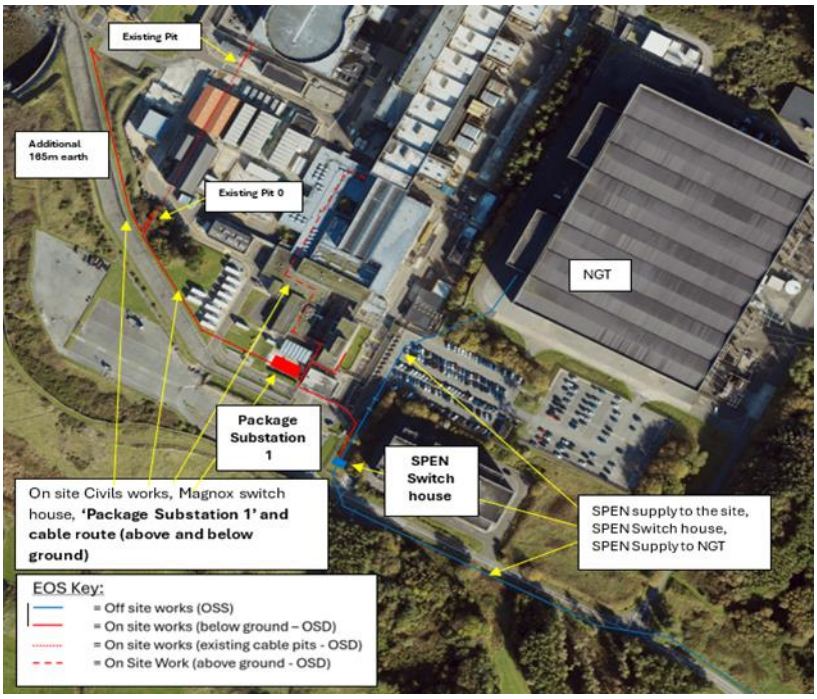
The Project is split into three sub work packages namely 'Off-Site Supply' (OSS), 'On Site Distribution'(OSD) and '415V Rationalisation Scope' (415V RS) - all of which have advanced over the last 12 months.

Developments include:

- Legal Easement discussions have progressed between NRS, SPEN, Horizon & NDA and approval has been granted to allow works to progress along NRS/NDA approach road from A5025.
- Following completion of Trial Holes in 2021/22, Land Quality and Waste Characterisation reports have been produced with all waste routes identified to ensure NRS deliver our waste "Duty of Care" and comply with associated regulatory requirements.
- All works in preparation for the OSD package continues to be overseen by a qualified Ecologist to ensure it does not have a negative impact on the surrounding flora and fauna. Mitigations to date have included habitat surveys and specific work arrangements in the locality of a colony of nesting 'Herons' to ensure we do not cause undue disturbance or harm. Surveys were carried out in the summer of 2023 and will be reviewed annually. Additional advice was also provided for the onsite trial holes to ensure appropriate mitigations were implemented to avoid impacts to the surrounding area and habitats.
- OSD package is progressing the 'design detail' with the supply chain and resolving all technical queries prior to progressing with this technically complex project. The concept phase was completed in February 2024.
- Co-ordinating with the site preparation for a new Site supply continues with rationalisation of existing Switchboards and De-cabling of 6 redundant 3.3KV Transformers.
- New supply feeder cables for the 415V RS have been installed and commissioned in preparation for future on-site supply requirements.
- Ground Investigation Surveys were completed July 2024.

Planned works for 2024/25:

- Progress Planning Application with IoACC for new On-site switch house.
- OSD expected to develop final design and seek 'NRS Engineering' approval in early 2025 with construction to commence thereafter. Land quality, Ecological and Waste implications will be at forefront of this phase of the project.
- The re-configuration of 415V supplies will enable the subsequent stand down of remaining identified High Voltage Transformers and switchgear once EOS is commissioned 2025/26.



Photograph 5 – Electrical Overlay System (EOS) Route and associated Substations.

6.2 Turbine Hall & Ancillary Building Decomissioning

The aim of current ongoing work is to ensure the safe and compliant transfer of demolition activities to a 'Principal Contractor (PC)' by effectively isolating the Turbine from all other site supplies thus rendering the plant safe for deplanting and demolition.

The enablers currently underway to support the safe de-planting and demolition of the Turbine Hall (TH) involve the Identification and air-gapping (physical disconnection) of all mechanical & electrical services that cross the turbine hall boundary.

To date the physical disconnections of the mechanical services are 59% complete with a scheduled completion date March 2025 for the small bore pipework.

The electrical services are still being identified with over 1400 cables pinpointed to date, with a target of completing all identification by March 2025 and a schedule to physically disconnect the services to commence thereafter.

The project is still in the concept phase and a final option for the 21 packages of work associated with this project has now been agreed.

With the mechanical and electrical packages being two of the 21 packages, work has been ongoing on a further 2; sewage plant re-supply and demineralised/ process water re-supply, with physical works going well on the sewage package and materials ordered for the other.

Two of the bigger packages of work is the Air-gapping of cooling water inlets and outlets, the Air-gapping of Reactor 1 (R1) and Reactor 2 (R2) pipe bridges both of which are in their design stages.

The next phase of the project will be to review the commercial strategy to award contracts to physically complete the other 17 packages.

Another package undertaken under this project is to ensure all systems have been Post Operationally Cleaned Out (POCO) - Draining of all oils and hazardous liquids from plant within the turbine hall. POCO of Oils was completed Jan 2024, other POCO and hazardous liquids are scheduled to be completed by December 2025.

Other enablers for this project include the installation of the new EOS which will replace and permit the removal of existing operational electrical supplies and equipment routed from the TH.

6.3 ILW Characterisation and retrival

This project will support future management of Wylfa's ILW by characterising and quantifying the site's ILW inventory to support successful retrieval and packaging. This will inform the future storage requirements of a new ILW package Ductile Cast Iron Container (DCIC) storage facility to satisfy the long-term decay and storage strategy.

Photograph 6 - DCICs will be the chosen packaging for ILW at Wylfa Site

The Characterisation project has been completed with the final analysis and interpretation reports now issued. The Radioactive Waste Inventory (RWI) has been updated accordingly to reflect the defined ILW inventory for Wylfa Site.

Work is currently underway with understanding how the individual wastes can be co-packaged in order to maximise the packaging of the Ductile Cast Iron containers and minimise the number required at Wylfa Site.

As detailed in section 5.3, ILW will be stored on site until a National Repository for ILW in the UK becomes available.

ILW Retrieval

The RWI will highlight all ILW present on-site whether it has already been recovered or if it is still present within certain plant areas.

ILW located in difficult to access areas such as Secondary Dry Store Cell 4 (DSC4) and its associated fuel discharge system (Diverse Discharge Route (DDR)), together with the Flask Filling Area (FFA) on the primary fuel route, will become the responsibility of a new ILW retrieval project. This package of works will be managed to ensure the critical path for site is not affected.

In 2023 the final waste characterisation of the Flask Filling Area (FFA) Trough sludge was conducted, and this highlighted that the small quantity of sludge in the Trough is ILW. The ILW retrieval Project will aim to retrieve the sludge and package accordingly.

This will entail removal of the sludge and placing it into a shielded container. Due to its small volume, the intention will be to co-package this waste with other ILW waste streams. The co-packaging work has significantly reduced the predicted number of DCICs that Wylfa site will need from a potential 27 DCICs to a much more manageable 10 DCICs. This has a knock-on effect on the size of the DCIC storage facility and the quantity of shielding required within it.

ILW located in other easier accessed locations will be recovered by a High Active Waste Operations team. This team will be developed in the near future and will be responsible for simple retrievals as well as compliant packaging of ILW into DCICs.

Over the last 12 months the project has:

- Baselined the project.
- Achieved funding.
- Carried out exploratory works to understand the true dose that is coming from the trough (FFA fuel handling equipment) and to remove thermocouple wire from within.
- Carried out initial optioneering to understand how to recover the sludge from the Flask Filling Area trough.

Over the next 12 months the project will:

- Complete the optioneering phase of the project to develop a clear strategy for retrieval of the sludge, what receptacle will be developed to provide shielding and what equipment will be developed to carry out the conditioning process.
- Develop full lifecycle costs for delivering the project and obtain sanction for the detailed design and implementation phase.
- Develop the design for all equipment required.
- Establish an operations team that can commence the development of implementation procedures and commence the testing of equipment.

Photograph 7 – Image of Flask Filling Trough area, sludge in Trough & example of Filters currently requiring of debris removal

6.4 DSC4 Decontamination project

In 2023 optioneering was conducted to ascertain the preferred entry point to DSC4 to allow the decontamination work to progress. The preferred entry point was via the Transfer Machine Bay floor (42m level) and down through the cell roof (35m level) which mitigated the need for a new

building on the roof of DSC4 and provided storage for ‘waste’ (namely steel) within the Transfer Machine Bay within the existing buildings. The intent was also to utilise existing 60-ton cranage on pile cap rather than the provision of new.

The Project has in 2024 been baselined with Gate 1 sanction granted.

Accessing the cell is now well understood and detailed technical specifications have been written for each package of work including concrete cutting to access the roof of the cell, development of a C3 containment (radiological control) on pile cap, development of a bespoke hoist to lift the 3 ton skips out of the cell and process within the C3 containment (radiological control) on pile cap.

These Technical specifications have received significant technical challenge and endorsed by a Design Authority Review (Site Project Governance Board - DAR 3).

The enabling works commenced to date included:

- Removal of a 2m thick masonry panel to access an inaccessible East Mezzanine room. 27 tonnes of rubble have been removed and disposed of offsite as inert brick and rubble.
- Erection of a Hakki staircase to the underside of DSC4 sprocket room in order to improve operator access into the sprocket room and avoid the need to use vertical ladders.

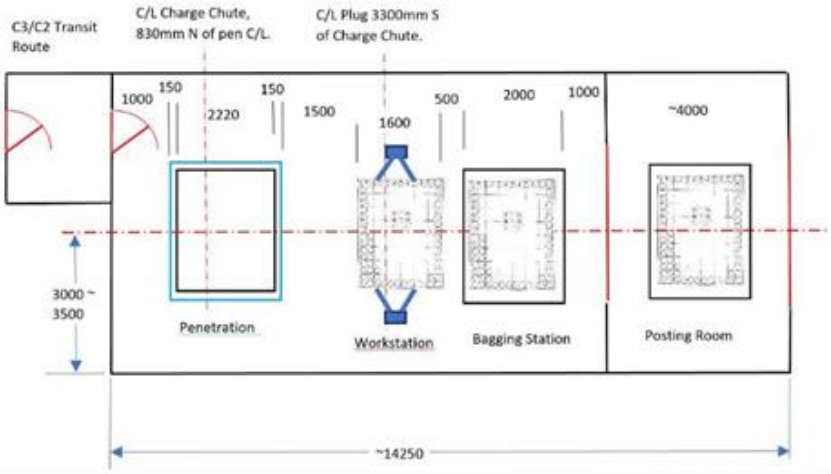
Photograph 8 – Image of the installed C2/C3 (radiological control) doors for access into East Mezzanine room.

Over the next 12 months the Project intends to Carry out further enabling works including:

- Removal of charge chute from East end of DSC4 and disposal (Contaminated steel) in accordance with the project waste management plan (PWMP).
- Removal of East end Indexing head from the side wall of DSC4 in the sprocket room and disposal (Contaminated steel) in accordance with the Project PWMP.

Over the next 12 months the Project intends to obtain sanction to place contracts for:

- Erection of a C3 building on pile cap on the Transfer Machine roadway above DSC4 East end. Within 12 months work may even commence with its construction on-site.
- Concrete cutting of pile cap and DSC4 roof at the East end of DSC4.
- Development of a bespoke Hoist over the penetration made at the East end of DSC4 pile cap and all mechanical handling of the skips on pile cap.



Photograph 9 – Proposed C3 building layout (similar to Nissen Hut design)

Completion of DSC4 Decontamination waste project work will be the end of 2028 when the cell and the equipment will be handed over to Waste Operations for decontamination work to take place. The expected duration for decontamination is likely to be 6 / 7 years

6.5 Waste Management Enabling Work

Various waste arisings resulting from decommissioning activities will necessitate efficient and compliant management. New facilities are being developed and will be built with this purpose in mind to ensure suitable provisions are in place to deliver these requirements throughout the Care and Maintenance preparation phase.

New facilities will include:

- ILW package (DCIC) storage facility - (Section 6.51)
- Combined high active waste & low active waste (HAW & LAW) facility - (Section 6.52).
- Clearance facility for the removal of non-active waste from the Material Controlled Area (Reactor Equipment Building) - (Section 6.53).

All the above are currently progressing through various levels of scheme design and sanctioning prior to the actual physical build phase; future developments and their progress will be reported in subsequent issues of this EMP.

6.5.1 DCIC Storage Facility

The DCIC Storage Facility will house the site's ILW once retrieved and packaged. This will remain on site until a suitable disposal route becomes available i.e. National Repository for ILW.

In 2023 the Project worked closely with a consultant to develop a scheme design for the facility. The resulting design underwent further assessment under the site's Value Engineering process

to optimise and improve overall affordability of the work with the aim of appointing a contractor to develop a detailed design in coming years

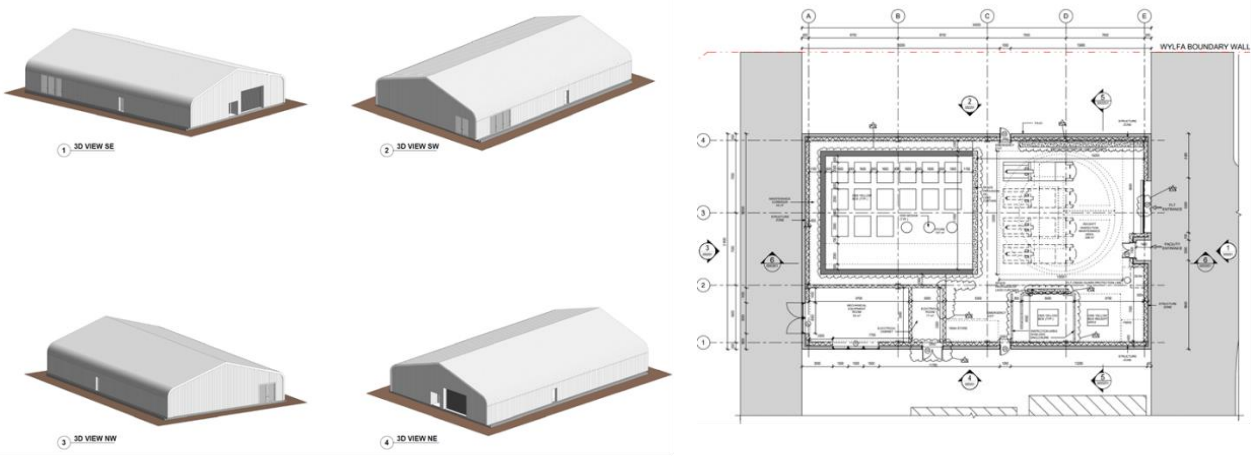
Over the last 12 months the project has:

- Completed the co-packaging report to understand how many DCIC packages will be required to package the known ILW on-site. It is now looking likely that 10 DCICs will be required including the 3 DCIC Mosaiks that have already been filled and are stored in the West Mezzanine room of DSC4.
- Carried out the shielding calculations to understand how much dose comes off the worst case DCIC. This has then enabled an operational strategy to be developed which is primarily revolving around being able to carry out routine maintenance of DCICs and the internal structure of the facility, from within the storage array itself.
- Carried out a robust value engineering exercise which has challenged the original functional requirements and enabled a revised footprint of the facility to be proposed which is much smaller.

Over the next 12 months the project will:

- Develop an optimised scheme design based on the outcome of the value engineering
- Update all deliverables associated with the scheme design to share the optimised design of the building with our stakeholders
- Return to the Project Governance Board to request sanction to engage the supply chain to tender and then deliver the Detailed design and build.

The build of DCIC storage facility is scheduled but is subject to funding constraints and at present is scheduled for completion by 2028



Photograph 10 – Concept Design of Building & Initial scheme design footprint plans.

6.5.2. HAW/LAW Facility

The HAW/LAW facility is being built to deliver the site's requirement to process and package of High Active and Low Active waste. New facilities are required to allow the site to manage the

various waste arisings resulting from decommissioning and thus these provisions are vital to support the delivery of the mission.

The HAW facility will process and package high active waste into the DCICs prior to storage in the new 'DCIC storage facility' (section 6.51) and similarly the LAW will process and package low activity waste prior to transporting off-site to an approved disposal facility

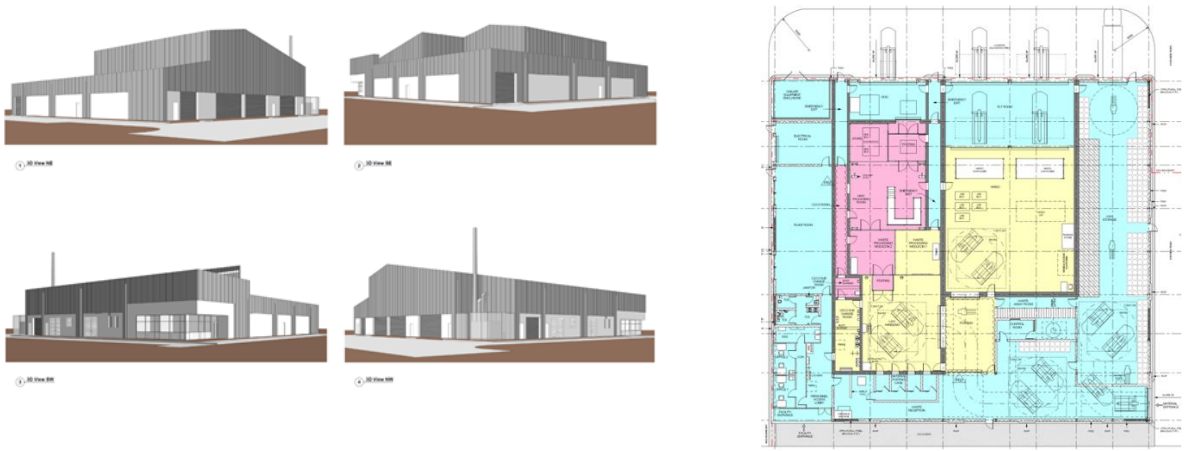
Over the last 12 months the project has:

- Completed the scheme design.
- Undertaken a detailed value engineering process challenging the functional requirements.
- Delivered a scheme design that fulfils all highlighted functional requirements of the facility. During this phase it became necessary to increase the required footprint to ensure sufficient space for all requirements were incorporated. With the draft scheme design in hand the project has now embarked on a Value Engineering process to optimise the final scheme design and improve the affordability of the project. This has entailed amending the functional requirements through challenging the operational needs, which has lead to a reduction in the facility footprint.

Over the next 12 months the project will:

- The Project will complete the optimised scheme design.
- Develop a robust cost estimate to understand the impact of the Value Engineering exercise.
- Carry out a DAR 3 review (Site Project Governance Board) and accept the scheme design.
- Progress to Gate 2C to request permission to engage the Supply chain.
- The project is currently on the company de-prioritised list and is likely to stay there for circa 2 years, hence requesting that the Programme Governance Board review the project and give permission to engage the supply chain.

The build of HAW/LAW facility is constrained by company funding and may well be delayed. Current schedule dates show completion by 2029.



Photograph 11 – Concept Design of Building & Initial scheme design footprint plans.

6.5.3 Clearance facility for the removal of non-active waste from the Material Controlled Area (MCA) (Reactor Equipment Building).

The site has identified a need for a larger facility to process and sentence non-active waste from within the Reactor Equipment Building (REB).

All waste removed from the REB requires radiological monitoring and thus the greater volumes of waste generated during the decommissioning phase requires appropriate facilities to ensure adequate capability for receipt, sorting, size reduction, packaging , laydown areas/storage and sentencing.

It is therefore planned that the site utilises a redundant 'portal frame structure covered with an engineered tension fabric (RUBB superstructure)' and relocate to the south west corner of the REB which is a suitable and appropriate location for monitoring the waste.

The re-use of this building not only delivers our environmental and sustainability goals but also provides a cost saving now and into the future i.e. build and future demolition costs.

The erection of this building will require consultation and planning approval from the IoACC and thus all regulatory approvals to achieve this will be delivered.

Over the last 12 months the project has:

- The Project has been baselined which means it is fully supported by the programme.
- Undergone an Ecology survey.
- Carried out a ground investigation survey including a topographical survey.
- Submitted a planning application for the drainage aspects of the scheme (SUDS report).
- Submitted planning application for the build initiated with a public consultation period.
- Completed the design of the RUBB Superstructure and conducted a Technical Design Review.
- Developed Technical scope of works for foundation design and engaged contractor.
- Developed technical scope of work for both construction of building and foundation / all hard landscaping.

Over the next 12 months the project will:

- Complete the planning process associated with the construction of the facility.
- Place contracts for construction of foundations, erection of RUBB superstructure.
- Installation of all electrical equipment within the facility.
- Carryout the dismantling and removal of the RUBB building from its current location.
- Carryout the excavation and construction activities associated with the building foundation construction.

- Carry out erection of RUBB building on the new facility together with electrical fit out and completion of hard landscaping around the building including fencing and lighting.
- Carry out all commissioning activities to enable Waste Operations to take ownership and operate the facility.

The Clearance facility is scheduled to be operational by 2025.

Photograph 12 – Schematic Design of RUBB Building & Initial design of footprint plans.

7. Ecological Update

The site has continued to commission habitat and targeted protected species surveys to support evolving work. These surveys have concluded that Wylfa site is a potential nesting area for several different species of bird as well as roosting bats, and that appropriate mitigations to prevent harm will be required as works progress .

Due to the ecological importance of the area surrounding site, habitat and ecological inspections are undertaken in advance of any building demolition and expert advice sought and enacted as necessary.

Ecological mitigations were implemented in 2022 informed by numerous surveys conducted on areas highlighted for demolition. These mitigations include the installation of bat and bird boxes located on site to support the relocation of bats potentially affected by the imminent decommissioning work.

It has also been recognised that liaison with NRW and a qualified ecologist will be required to ensure the appropriate wildlife licensing is obtained prior to specific work activities.

Photograph 13 – Bat & Bird boxes erected at Wylfa site in 2022

The decommissioning works undertaken during 2023/24 included various ecological mitigations supported by the production of a nesting bird management plan. The nesting bird management plan detailed the mitigation measures implemented at several locations across site for each of the nesting bird species.

As done in previous years a 30m exclusion zone was erected around the 'Secondary Dry Store Cell 5 (SDSC5)' for the 'Schedule 1' Chough's nesting season (from the 1st of March to the 31st of July 2024) and all site works were managed to mitigate disturbance. During the follow-up site visits on the 1st May & 15th May 2024 the licensed ecologist confirmed that the nest was active with three eggs observed.

However, further inspection on the 10th of June 2024 discovered that the eggs were no longer present, and the lining of the nest had been removed. The failure of the nest was inconclusive but efforts to support these important birds will continue year on year, with all attempts to improve on our achievement of 14 healthy Wylfa chicks over the last 14 years

2021

2023

Photographs 14 & 15 - Chough chick being ringed on site by licensed ecologist in 2021 & 2023

Advice on future management of the site's resident pair of choughs will continue to be sought to ensure we apply the appropriate actions to support this rare species of bird throughout our

activities. Measures to sponsor projects in collaboration with 'Horizon Nuclear Power' to actively manage the conservation of Wylfa Head local nature reserve (LNR) and Tre'r Gof (SSSI) have been implemented. These improvements will promote the biodiversity at these important designated sites while at the same time positively improving chough feeding areas and potential nesting sites on the headland.

In July 2022, Nuclear Restoration Services commissioned consultants to undertake a biodiversity appraisal of the NRS Wylfa site. The purpose of the biodiversity appraisal was to establish the landscape and ecosystem baseline, providing quantitative and monetary assessments of Wylfa's ecosystem services and the net benefit of the biodiversity value. Net Benefits for Biodiversity (NBB) is the approach that developers in Wales will have to use to demonstrate that they have met their obligations to maintain and enhance biodiversity and build resilient ecological networks in Wales from November 2023.

Three reports have been produced by Middlemarch for each site:

Preliminary Ecological Appraisal (PEA) comprising of:

- *Desk study collecting ecological data from Local Biological Record Centres, and local species Interest Groups.*
- *A Habitat survey - providing a record of the habitats present on site.*
- *Habitat Condition Assessment - a condition assessment of all habitats on site.*

Biodiversity and Ecosystem Services Baseline (ESB):

- *This includes analysing baseline habitat data for the site, the data has been put into the Natural England Biodiversity Metric to determine a biodiversity baseline.*
- *In addition to determining sites biodiversity baseline, data collected during the PEA will also be used to calculate Carbon sequestration, nutrient regulation, flood water attenuation and social and health wellbeing.*

Eco-Landscape (Eco-LA) Appraisal:

- *An appraisal will be undertaken to provide a holistic assessment of the site's ecosystems and ecology within both its immediate and wider landscape context.*
- *The aim of this will identify potential opportunities for greater habitat and landscape integration, and to highlight any issues or current constraints which could be migrated via nature-based solutions.*

Phase 2 of the biodiversity work for the financial year 23/24 has focused on the Risks & Opportunities associated with changes due to occur on NRS sites in the next 5 years. The aim is that this work will allow for informed pre-planning decisions to be taken by NRS.
This includes the development of a Detailed Assessment of Risks and a Risks and Opportunities Masterplan:

Detailed Assessment of Risks (Ecological) (DARE):

- This will produce a short report detailing the ecological risk associated with each building/area of works assessed, including risks from protected species, European/UK statutory/non-statutory sites and will include direct and indirect impacts.
- Outline of actions that need to be taken to resolve all ecological risks.
- Provision of Global information Systems (GIS) layers

Risks and Opportunities Masterplan (ROMp):

- This combines the data produced by the completed Phase 1 surveys: PEA, Eco-LA and ESB and the DARE assessment to highlight opportunities to avoid impacts, mitigate effects, reduce risks, highlight required protected species licenses, compensate for unavoidable losses and deliver new biodiversity gains.
- These plans will include input from NRS site managers and key stakeholders etc.
- The focus of this plan will be short-term for the next 5 years but will provide the first step to producing a long-term strategy for ecology for the site.
- Everything in the ROMp will be able to be expanded upon in future years as NRS gain a better understanding of Ecology and Ecosystem services.

8. Wylfa History - 'Past, Present & Future'.

Progress has been made in relation to commitments made under topic area 'Archaeology and Cultural Heritage'. These commitments ensure that Wylfa site is recorded and reported at the appropriate level over its lifetime.

In view of the industrial significance of Wylfa site a 'Written Scheme of Investigation' (WSI) has been produced by Gwynedd Archaeological Trust (GAT) in liaison with the 'Royal Commission of Ancient Historical Monuments Wales (RCAHMW) detailing the walkover surveys required to identify any historical remains along with the requirements to record the site at an appropriate level.

This recording will be conducted systematically as buildings are removed. All records and photos are to be deposited into an appropriate archive as specified by GAT & RCAHMW for generations now and into the future to view and appreciate the cultural and archaeological significance of Wylfa site.

Photographs 16 & 17 – Wylfa site during construction circa 1965

The impacts from noise, vibration and dust created during demolition activities will be managed to ensure their effects on the local community and environmental receptors are adequately controlled and minimised.

Discussions with the IoACC Environmental Health Officer (EHO) have been conducted and all recommendations are to be implemented and managed in accordance with their advice and British Standard guidance. Monitoring will be employed to underpin the adequacy of controls and highlight deficiencies promptly; sampling thus far has shown that mitigations employed have been appropriate.

Baseline groundwater monitoring is performed biannually to provide suitable comparison to changes during decommissioning. This sampling to date has shown no groundwater issues and future analysis will be employed to ensure contamination migration is detected and appropriately addressed should it be required.

There has been one assessment of change against the consented baseline over the last year (as detailed in section 5.1 General Site Management). Previous changes relating to the proposal to store redundant radioactive equipment (Fueling Machine & Transporter) on pile cap until final site clearance still applies.

The EIADR consented project was to 'decontaminate and de-plant' equipment from the 'Reactor Equipment Building' (REB) during the C&M preparations phase. However, in light of further considerations and developing experience it has been concluded that the storage of this equipment until final site clearance is the best overall option to allow activity to decay and thus minimise personnel exposure (ALARP principles). A 'Finding of No Significant Effects' (FONSE) has been recorded and no environmental consequences have been identified as a result of this change.

Decommissioning of NRS sites is undertaken using a programmed management structure. Wylfa site has now fully adopted these new management arrangements. Being the last station to enter these programs Wylfa site will benefit from the experience gained decommissioning other sites.

The EMP has not yet been impacted by works associated with the proposed new nuclear power station on land adjacent to the site, however, it has been identified that the new build company (new investor) may like to utilise parts of the site in their plans. Wylfa was working with Horizon and the regulators regarding the potential early delicensing or leasing of the land and will continue in the same vain now that 'Great British Nuclear (GBN)' have taken ownership in 2024. The impact of this on the overall decommissioning project is likely to be low as it will be limited to the early completion of some decommissioning works.

Since the last issue of thee EMP and following the subsequent purchase of land by 'GBN' there have been no firm plans to develop the 'Wylfa Newydd' site, and its future is yet to be decided.

No Cumulative Impact Assessment (CIA) reviews have been required as there have been no changes to physical works at Wylfa Site, or Horizon Nuclear Power or Great British Nuclear over the last 12 months.

Alongside this EMP, Wylfa has a Biodiversity Action Plan (BAP). The BAP is a separate document which describes measures to maintain and enhance the biodiversity of the site in accordance with the local and national BAPs (LBAP and UKBAP). Wylfa's BAP aims to complement those mitigation measures as described in the Environmental Statement and EMP. Following the sale of land surrounding Wylfa for the new nuclear power station development, the scope of the Wylfa BAP has been significantly reduced, however, Wylfa will continue to collaborate with external parties with regard to protection and encouragement of biodiversity.

9. Mitigation Measures

The following tables list the identified mitigation measures for each phase of the decommissioning project at Wylfa. Mitigation measures identified in the original 2008 Environmental Statement are shown in non-italics. Additional mitigation measures, actions and comments from the new 2013 Environmental statement are shown in italics.

10. Care and Maintenance Preparations

10.1 Mitigation measures already identified (Condition 3a)

Environmental Impact	Mitigation Measure	Action	Comments
Air Quality and Dust			
Dust Emissions (from on-site) • 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.	The following best practice measures will be implemented as appropriate: • 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.	• Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans. • The effectiveness of dust mitigation will be monitored. There are a variety of means of measuring dust deposition (e.g. sticky pads); directional monitoring will be used if possible. It may be appropriate to initiate monitoring before works commence in order to determine the background contribution to which the site may add. Arrangements will be discussed and agreed in advance with the local authority as necessary.	• These mitigation measures primarily concern impacts on humans. However, their implementation will also offset possible impacts of dust deposition on sensitive habitats immediately adjacent to the site.

Environmental Impact	Mitigation Measure	Action	Comments
	• 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.	• *Specific methods of dust monitoring will be agreed in consultation with IoACC's Environmental Health Officer (EHO).*	
Dust Emissions (road side from vehicles) • The impact of dust on residential properties from soiled vehicles or vehicles carrying potentially dusty loads	As appropriate: • 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.	• Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans. • These mitigation measures will be considered as part of the development of the Transport Management Plan.	• These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.
Archaeology and Cultural Heritage			
• Certain features of the historic landscape have the potential to have survived the disturbance of construction within the	• A walkover survey to identify any surface evidence of previous occupation and land use, including agricultural, industrial, maritime and wartime	• Ensure that walk over surveys are carried out sufficiently in advance of works and that the advice of a suitably qualified and	• Should Horizon wish to acquire some of this land for "Wylfa Newydd" – any works should be

Environmental Impact	Mitigation Measure	Action	Comments
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.	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.	experienced person is first obtained. • *In view of the industrial significance of the Wylfa complex, it will be recorded at an appropriate level before dismantling works are undertaken and records relating to its construction and use will be deposited in an appropriate archive.* • *It has been agreed with the RCAHMW that a photographic record prior to and during decommissioning works, supplemented by background information on the history of Wylfa, will constitute an appropriate level of recording.* • *If agreed to be necessary, a Written Scheme of Investigation (WSI) providing detail of the necessary mitigation will be produced and agreed with Gwynedd Archaeological Trust prior to the start of decommissioning.*	completed prior to handover. • *RCAHMW – Royal Commission on the Ancient and Historic Monuments of Wales*
Ecology			

Environmental Impact	Mitigation Measure	Action	Comments
• Disturbance to or loss of small amounts of coastal cliff grassland and strandline vegetation by use of Laydown Areas 1 (North West corner of site) and 2 (South West corner of site – including the current contractors car park).	• Use of a buffer strip in Laydown Area 2 and restricting Laydown Area 1 to within the outer security fence.	•	• *Laydown area 2 may not be available for decommissioning use as it may be transferred to Horizon for the New Build Nuclear Project.* • *The implementation of measures that would provide a net gain for biodiversity will be discussed and agreed with NRW.*
• Loss of or disturbance to habitat of moderate botanical interest in Laydown Area 2.	• 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.	• Ensure that measures are put in place sufficiently in advance of works.	
• 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.	• No part of Laydown Area 1 to extend outside the outer 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.	• Control of dust with standard dust suppression technologies including use of water (see air quality above).		
• Accidental killing of adders during demolition of the towns water tank (large concrete structure located North of the 400KV sub-station).	• Reptile-proof fencing around work area and removal of reptiles from within by hand searching or use of refugia.	• A suitably experienced ecologist will be employed to oversee this work and to obtain necessary permissions from NRW.	• Habitat actions for adders are also included in the Wylfa Biodiversity Action Plan.

Environmental Impact	Mitigation Measure	Action	Comments
	• Hand strimming areas suitable for adders to discourage occupation prior to demolition. • Re-instate suitable adder habitat on the footprint of the former towns water tank.	• Ensure that measures are put in place sufficiently in advance of works and that the advice of a suitably qualified and experienced person is first obtained. • *A targeted reptile survey (to include all suitable reptile habitat within the site) one year prior to the commencement of the decommissioning works and hand-strimming any suitable vegetation that is present within the site that would be directly affected by the proposed works. If reptiles were found to be present during the pre-decommissioning survey, reptile-proof fencing will be installed around such areas.*	
• Disturbance to bird species from construction of a coffer dam, demolition of the outfall gatehouse complex and explosive demolition of the offshore structures.	• Explosive demolition to occur outside of breeding and passage seasons (March – September).		
• Loss of habitat and increased disturbance could cause severe disruption to	• Restrict Laydown Area 1 to within the outer security fence.		

Environmental Impact	Mitigation Measure	Action	Comments
the gull colony in Laydown Area 1.			
• Potential loss of habitat and or buildings could impact breeding birds and other protected species.	• 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.	• Ensure that measures are put in place sufficiently in advance of works and that the advice of a suitably qualified and experienced person is first obtained. • *Mitigation for the loss of chough nest sites will be provided. This includes the provision of artificial nest boxes within an area that would not be disturbed by the proposed works. Suitable nest boxes will be provided prior to the commencement of the proposed decommissioning works.* • *The demolition of any buildings that are used by nesting choughs will be undertaken outside of the bird breeding season (which is between the months of March and August (inclusive)).* • *Updated surveys for badgers, otters, water voles, bats and other legally protected species will be undertaken one*	

Environmental Impact	Mitigation Measure	Action	Comments
		year before the commencement of any decommissioning works that could affect these species. These surveys will be supplemented with on-going monitoring by an Ecological Clerk of Works during active decommissioning works to ensure legislative compliance.	
• 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.	• All such buildings to be surveyed for roosts approx. 2 years before demolition; mitigation for found roosts to be agreed and licensed by NRW. 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 NRW • Demolition under EPS licence guaranteeing safe exclusion and provision of alternative roost site.	• Ensure that measures are put in place sufficiently in advance of works and that the advice of a suitably qualified and experienced person is first obtained	• An action to monitor the bat roost is included in the Wylfa Biodiversity Action Plan. • *It is noted that Horizon have already constructed bat barns near the site as mitigation for their works (comment 2017 update).*
• Disturbance to foraging bats from light spill.	• After-dark working will be minimised and confined to		

Environmental Impact	Mitigation Measure	Action	Comments
	winter; directional lighting will be used.		
• Disturbance to cetaceans and grey seals from explosive demolition of the CW jetty and offshore structures.	• 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.	• Ensure that measures are put in place sufficiently in advance of works and that the advice of a suitably qualified and experienced person is first obtained.	
Geology, Hydrogeology and Soils			
• 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.	• 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.	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	
• Changes in soil and/or groundwater quality due to creation of new contaminant pathways (e.g. due to the creation of boreholes, piles or excavations connecting previously unconnected geological strata).	• Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS 10175 (Investigation of Potentially Contaminated Sites – Code of Practice). • Compliance with EA Technical Report 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		

Environmental Impact	Mitigation Measure	Action	Comments
	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.	• 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. • *Following guidance PPG 22 – Dealing with Spills*	• Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans	
• 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.	• 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. • *Where applicable; adoption of EA Rapid Measurement Techniques and EA Model*	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	• Wheel washing addresses dust, ecology, surface waters and highways impacts also.

Environmental Impact	Mitigation Measure	Action	Comments
	Procedures for the Management of Land Contamination (CLR11). • 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) including, if necessary, use of water sprays with appropriate management of wastewater arisings and on-site road cleaning. • 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'.		
• 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.	• 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	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	

Environmental Impact	Mitigation Measure	Action	Comments
	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 a Site Waste Management Plan (SWMP).		
• 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.	• *Undertake a tiered qualitative risk assessment (QLRA) process to understand the structures, the condition of the concrete, impact of saline or groundwater interface in order to understand the potential for the release of ions or contamination from surfaces into groundwater. If adverse impact is identified as possible, undertake detailed geo-environmental risk assessment to inform the decommissioning methodologies and to take into account any site specific contamination and geotechnical constraints.* • Improved characterisation of groundwater levels and flow direction prior to the start of decommissioning. • Sampling and testing of potentially contaminated soils,	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	

Environmental Impact	Mitigation Measure	Action	Comments
	wastes and materials prior to use as appropriate. • Puncture all remaining services and foundations to reduce the likelihood of ponding. • *Alternatives to puncturing may include back-fill with structural low permeability (e.g. cohesive or stony cohesive fill) and/or assessment of whether "ponding" (e.g. within granular fill) presents a risk situation.* • *Removal of sub surface tanks and sealing of voids if appropriate (refer to PPG 27).*		
• 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	• Desk studies and site investigation to determine groundwater levels, flows and characterise the full extent of any contamination. • *Undertake a tiered review of local site specific site investigation and hydrogeological information to inform likely effects and required mitigation measures* • *•Characterisation of the likely contamination under buildings/ to inform potential sources of contamination.* • Dewatering of affected areas to avoid mobilisation of contaminants. Remediation	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	

Environmental Impact	Mitigation Measure	Action	Comments
	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.		
• The degradation of construction materials due to high levels of sulphate in soil or groundwater.	• 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 investigations will be undertaken in order to inform the construction methodologies and to take into account any site specific contamination and geotechnical constraints.		

Environmental Impact	Mitigation Measure	Action	Comments
Landscape and Visual			
• Impacts on local views	• Use of directional lighting. • *A Seascape Assessment will be carried out in combination with any new major development at Wylfa.*	• This mitigation will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	• The impact associated with any additional lighting on site has been assessed as 'not significant'. However, this mitigation measure is proposed as a measure of best practice, in order to contain the extent of illumination to those areas which are intended to be lit only.
Noise and Vibration			
Local residential properties, recreational areas & industrial receptors • General changes to noise directly from the site and associated changes in traffic.	As appropriate: • Use of equipment fitted with effective silencers where practicable; • Appointment of a site contact to whom complaints/queries about construction/demolition activity can be directed - any complaints to be investigated and action taken where appropriate; • Local residents informed of exceptional activities; • No potentially significant external working outside of normal working hours without prior agreement with the local authority;	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	• The use of noise barriers between particularly noisy activities and sensitive receptors may be appropriate but is not currently proposed. Upon completion of the detailed methodology of work, an agreement with the local authority under Section 61 of the Control of Pollution Act 1974 may be appropriate.

Environmental Impact	Mitigation Measure	Action	Comments
	• *The hours of working will be planned, and account will be taken of the effects of noise upon persons in areas surrounding site operations and upon persons working on site, taking into account the nature of land use in the areas concerned, the duration of work and the likely consequence of any lengthening of work periods.* • All construction activity to be undertaken in accordance with good practice as described by British Standard 5228:1997 Noise and Vibration Control on Construction and Open Sites. This includes minimising unnecessary revving of engines, turning off machines when not required and routine maintenance of equipment. • *Where reasonably practicable, quiet working methods will be employed, including use of the most suitable plant, reasonable hours of working for noisy operations, and economy and speed of operations. Site work will be programmed, when appropriate, so that haulage vehicles will not arrive at or*		

Environmental Impact	Mitigation Measure	Action	Comments
	leave the site between 1900hrs and 0700hrs. • *Noise will be controlled at source and the spread of noise will be limited, through implementation of general measures such as:* • *Avoiding unnecessary revving of engines and switching off equipment when not required;* • *Keeping internal haul routes well maintained and avoiding steep gradients;* • *Using rubber linings in, for example, chutes and dumpers to reduce impact noise;* • *Minimising drop height of materials; and* • *Starting-up plant and vehicles sequentially rather than all together.* • *The movement of plant onto and around the site will have regard to the normal operating hours of the site and the location of any sensitive receptor locations as far as is reasonably practicable.* • *The use of conventional audible reversing alarms may cause problems on some sites and alternatives are available. Audible reversing warning systems on mobile plant and*		

Environmental Impact	Mitigation Measure	Action	Comments
	vehicles will be of a type which, whilst ensuring that they give proper warning, has a minimum noise impact on persons outside sites. Where practicable, alternative reversing warning systems will be employed to reduce the impact of noise outside sites. • *A method of noise measurement will be agreed prior to commencement of site works.*		
Socio-economic			
Direct Employment • Employment opportunities and unemployment level in Anglesey	• Magnox Ltd will make every effort to re-deploy affected staff and support staff in re-training or re-skilling for decommissioning roles. • Magnox Ltd will encourage its contractors to make use of local labour, equipment & services wherever possible. • *Magnox will make every effort to re-deploy affected staff and support staff in re-training or re-skilling for decommissioning roles, in addition to retraining for new roles within the proposed new nuclear power station at Wylfa (if feasible) and other industries on Anglesey;*	• Contractors will be provided with a list of local companies known to be capable of involvement as sub-contractors in decommissioning works.	• *2019 Update – as a consequence of the 'Wylfa Newydd' project being put on hold – an independent traffic management plan may be appropriate.*

Environmental Impact	Mitigation Measure	Action	Comments
	• *Preparing a joint Traffic Management Plan with the owners of the proposed new nuclear power station at Wylfa (i.e. minimise effects on the Island's tourism sector);* • *Inputting into a Welsh Language Impact Assessment prepared by the owners of the proposed new nuclear power station at Wylfa; and* • *The co-ordination and joint working between Magnox and other developers on Anglesey i.e. including the owners of the proposed new nuclear power station at Wylfa, will be pursued where socio-economic gains could be secured. As stated in the 2012 Pre-application Opinion Scoping Report, potential joint mitigation between Wylfa and the proposed new nuclear power station will be firmed up in future updates and reviews of the site's Environmental Management Plans and once plans for the proposed new nuclear power station are better defined.*		

Environmental Impact	Mitigation Measure	Action	Comments
Surface Waters			
• Changes in terrestrial and coastal water quality due to release of sediment laden run off from construction, demolition, and traffic movements.	Where necessary: • 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; • 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.	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	• Wheel washing addresses dust, ecology, geology etc. and highways impacts also.

Environmental Impact	Mitigation Measure	Action	Comments
• Changes in terrestrial and coastal water quality due to minor spills or leaks of non-radioactive substances.	• 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).	• Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	
Traffic and Transport			
• Impacts on operation and safety and environment of A5025.	• 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. • To reduce the traffic and transport impacts associated with the decommissioning of Wylfa, a Traffic Management Plan be prepared and agreed with the Highway Authority. • A monitoring regime will also be set out to determine the effect	• Development of a Transport Management Plan to encourage communal transport or car sharing. • *The Traffic Management Plan will set out measures to reduce the impact of HGV movements as set out in in the examples provided in Appendix 18.1 of the 2008 ES. To reduce the impact associated with staff (including contractors, Magnox staff, etc) travelling to and from the site the Traffic Management Plan will contain travel planning measures. Initially this will include measures to encourage staff to car share when travelling to and from the site and*	• *The Traffic Management Plan will also be updated if/when the works associated with decommissioning Wylfa coincide with significant neighbouring developments, such as the proposed new nuclear power station at Wylfa. It is considered that although cumulative traffic and transport impacts will be higher, there may be opportunities for significantly reducing the individual impact associated with the decommissioning of Wylfa through a*

Environmental Impact	Mitigation Measure	Action	Comments
	of the travel planning measures and monitor overall traffic generations during the decommissioning.	*providing information on sustainable travel options before developing the measures further following feedback/surveys with staff when decommissioning commences.* • *The monitoring regime could include surveying staff travelling to the site to find out how they travel and determine what measures may work to achieve modal shift, as well as the introduction of a permanent traffic counter at the site entrance which could monitor the traffic generations during the decommissioning.*	*combined Traffic Management Plan.* • *Measures could include: co-ordinating HGV movements (so that if periods of intense HGV movements are expected for the proposed new nuclear power station at Wylfa then it may be possible to minimise HGV movements for the decommissioning and vice versa), potentially sharing facilities such as the Marine Offloading Facility (MOLF) which may be provided as part of the proposed new nuclear power station at Wylfa, and/or recycling material within the wider site (e.g. using surplus topsoil generated by the proposed new nuclear power station at Wylfa for in-filling on the decommissioned site).* • *Travel planning opportunities for decommissioning staff*

Environmental Impact	Mitigation Measure	Action	Comments
			travelling to site could also be increased by the presence of the proposed new nuclear power station at Wylfa. This could include having a greater chance of finding a partner to car share to work with and allowing decommissioning workers to also use the accommodation to be provided for the construction workers associated with the proposed new nuclear power station at Wylfa, thereby being able to car share/use shuttle bus services or other travel planning mitigation measures put forward as part of the proposed new nuclear power station at Wylfa.

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

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

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

Environmental Impact	
• No such activities have been identified.	

11. Care and Maintenance (Topics not listed here have no significant adverse environmental impacts on this phase of decommissioning)

Environmental Impact	Mitigation Measure	Action	Comments
Geology, Hydrogeology and Soils			
• The Creation of new long-term contaminant pathways (e.g. through the connection of previously unconnected geological strata)	• Compliance with British Standard 5930 (Code of Practice for Site Investigations) and BS 10175 (Investigation of Potentially Contaminated Sites – Code of Practice). • Compliance with EA Technical Report P5-065/TR (Technical Aspects of Site Investigation). • Compliance with relevant PPG guidelines. • Production of risk assessments, method statements and contingency plans.		
• Several tasks carried out during Care and Maintenance Preparations may result in on-going impacts for subsequent decommissioning phases. In respect of these on-going impacts then some or all of the impacts and mitigation measures (all of which would have been applied in the preceding phase) are as described above under Geology, Hydrogeology and Soils for the Care and Maintenance Preparations phase.			

Landscape and Visual			
• Impacts on local views	• Use of directional lighting.		

12. Final Site Clearance

12.1 Mitigation measures already identified (Condition 3a)

Environmental Impact	Mitigation Measure	Action	Comments
Air Quality and Dust			
Dust Emissions (road side from vehicles) • Increase in dust at receptors along traffic routes due to soiled vehicles or vehicles carrying dust loads.	As appropriate: • Sheeting of lorries carrying dusty loads; • Regular cleaning of site entrance and • Provision of wheel and body washing where appropriate for, as a minimum, heavy goods vehicle leaving the site.	• Routine control will be enforced through existing site procedures. Any additional requirements will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans. • These mitigation measures will be considered as part of the development of the Transport Management Plan.	• These mitigation measures primarily concern impacts on humans and aim to reduce the potential for complaints associated with fugitive dust.
Archaeology and Cultural Heritage			
• No significant adverse environmental impacts identified arising from decommissioning activities			
Ecology			
• Impacts and mitigation measures associated with this phase are expected to be very similar to those identified for the Care and Maintenance Preparations. The mitigation measures proposed for the C&M Preps phase are therefore repeated here for completeness however, prior to any works commencing a number of ecological surveys will be undertaken to determine the presence or absence of protected species and habitats or species of conservation concern, both within and immediately adjacent to the site and up to an agreed distance from the site boundary. Proposed mitigation measures will be reviewed and revised as appropriate at the time in light of the results of the new surveys and nature conservation policies at that time.			

Environmental Impact	Mitigation Measure	Action	Comments
Geology, Hydrogeology and Soils			
• The Final Site Clearance works are similar in nature to those undertaken during Care and Maintenance Preparations, whereby the remaining radioactive structures and plant on site will be removed. • Impact magnitudes and significances with and without mitigation are similar to those discussed for the Care and Maintenance Preparations and are therefore not repeated in this section. • The main difference during the Final Site Clearance phase of decommissioning is the beneficial impact of remediation which is assessed as 'key significant' as, following post remediation validation monitoring, all restrictions will eventually be removed, this being an objective of the remediation at this time.			
Landscape and Visual			
• Impact on local views	• Any new lighting to be installed on site should be directional lighting.	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	• The impact associated with any additional lighting on site has been assessed as 'not significant'. However, this mitigation measure is proposed as a measure of best practice, in order to contain the extent of illumination to those areas which are intended to be lit only.

Environmental Impact	Mitigation Measure	Action	Comments
Noise and Vibration			
Local residential properties, recreational areas & industrial receptors • Increased noise levels at receptors due to activities on site.	As appropriate: • Use of equipment fitted with effective silencers where practicable. • Appointment of a site contact to whom complaints/queries about construction/demolition activity can be directed - any complaints to be investigated and action taken where appropriate. • Local residents informed of exceptional activities. • No potentially significant external working outside of normal working hours without prior agreement with the local authority. • All construction activity to be undertaken in accordance with good practice as described by British Standard 5228:1997 Noise and Vibration Control on Construction and Open Sites. This includes minimising unnecessary revving of engines, turning off machines when not required and routine maintenance of equipment.	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans.	
Socio-economic			
• No significant adverse environmental impacts identified arising from decommissioning activities during this phase.			

Surface Waters
The activities occurring on site during Final Site Clearance are likely to be broadly similar to those occurring during Care and Maintenance Preparations. Therefore impacts related to releases of water contaminated by sediments and spillages/leakages can be expected along with changes to routine discharges. The impacts and appropriate mitigations are the same as for Care and Maintenance Preparations

Environmental Impact	Mitigation Measure	Action	Comments
Traffic and Transport			
• Increased traffic on A5025 South of Wylfa	• No specific mitigation is possible because of the absence of specific accident clusters and causes and/or because the routes benefit from accident records at or below the national average. However, a Travel Plan will be implemented which will encourage communal transport or car sharing (see Appendix 2). • *To reduce the traffic and transport impacts associated with the decommissioning of Wylfa, a Traffic Management Plan be prepared and agreed with the Highway Authority.*	• Development of a Transport Management Plan to encourage communal transport or car sharing.	• These mitigation measures will be re-considered on the basis of repeat traffic surveys prior to final site clearance.
• Environmental Impacts e.g. proximity of vehicles to pedestrians, pedestrian amenity and mud on roads etc.	• No specific mitigation is possible because of the absence of specific accident clusters and causes. However, a Travel Plan will be implemented which will encourage communal transport or car sharing. • Wheel washing of HGVs as necessary.	• These mitigation measures will be considered as part of the environmental, health and safety justification produced as part of individual decommissioning project plans. • The mitigation measures will be considered as part of the development of the Transport Management Plan	• These mitigation measures will be re-considered on the basis of repeat traffic surveys prior to final site clearance. • Wheel washing addresses dust, ecology, geology etc. and surface waters impacts also.

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

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

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

Environmental Impact
• Additional mitigation measures (or any changes required to those measures listed above) for activities during final site clearance will be based on the technologies available at that time, decommissioning experience and any future environmental assessment deemed necessary. In particular, repeat ecology and traffic surveys, the former including bat, protected species and breeding bird surveys, prior to final site clearance are proposed followed by a reconsideration of the appropriate mitigation measures.

13. Appendix 1 Letter Providing Consent to Decommission and Attached Conditions

Decommissioning Project Consent 25 September 2013

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

CONSENT

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

Wylfa nuclear power station

The Health and Safety Executive, pursuant to an application under the Regulations for consent to carry out the project* under regulation 4(a) and in accordance with the requirements of regulation 8(3) and subject to conditions attached under regulation 8(4) grants consent for the project under regulation 4(b), as follows:

(i) to remove all buildings except the reactor buildings;

(ii) to alter the reactor buildings for a period of deferment;

(iii) to retrieve and package operational intermediate level waste, and to store that intermediate level waste until it can be removed from site; and

(iv) to clear the site, subject to the conditions under regulation 8(4) attached.

Dated: 25 September 2013

Signed

Derek Lacey

For and on behalf of the Office for Nuclear Regulation, an agency of the Health and Safety Executive

Derek Lacey

A person authorised to act in that behalf

* Project as defined in regulation 2

Conditions attached to Decommissioning Project Consent 25 September 2013

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

CONDITIONS

attached under regulation 8(4) to Decommissioning Project Consent No. 1 granted under regulation 4(b)

WYLFA NUCLEAR POWER STATION

Condition 1

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

Condition 2

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

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

Condition 3

Within 90 days of the date of this Consent, with reference to the environmental statement provided under regulation 5(1) the environmental management plan shall:

a. list the mitigation measures that are already identified in the environmental statement;

b. list the options to implement work activities where mitigation measures may be required but where selection of an option will only be possible in the future; and

c. list the work activities where mitigation measures may be required but where assessments to identify mitigation measures will only be possible in the future.

Condition 4

Subsequent to condition 3, the environmental management plan shall:

a. with reference to condition 3b, identify the mitigation measures for options that have been selected, giving reasons for their selection;

b. with reference to condition 3c, identify the mitigation measures from assessments carried out, giving reasons for their selection;

c. describe the effectiveness of the mitigation measures taken over time; and

d. describe significant changes to the mitigation measures in light of experience, giving reasons for such changes.

Condition 5

The licensee is required to:

a. provide the environmental management plan to the Health and Safety Executive within 90 days of the date of this Consent and on each anniversary of the of the expiry of this 90 day period or within such longer time as the Executive may agree, the licensee shall provide an updated environmental management plan;

b. make the environmental management plan available to the public within 30 days of the plan being sent to the Health and Safety Executive, or within such longer time as the Executive may agree; the plan may replace earlier versions.

Condition 6

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

Dated: 25 September 2013

Signed

For and on behalf of the Office for Nuclear Regulation, an agency of the Health and Safety Executive

Derek Lacey

A person authorised to act in that behalf

14. Appendix 2 Principles for a Transport Management Plan

Objective

All decommissioning operations involving transport will be managed so as to minimise the environmental effects of these operations, as far as is reasonably practicable. The principles for achieving this are defined below.

Transport Management Principles

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

At present decommissioning activities have remained small scale and therfore not considered to have any significant impact on the local traffic management. A traffic manangement plan may need to be implemented and agreed with the local authority ahead of large scale works, most likely to be triggered by the demolition of the turbine hall.