

Strategic Environmental Assessment Site Specific Baseline

Wylfa Site



FOREWORD

This document has been prepared to support the NDA's Strategic Environmental Assessment of its decommissioning strategy for the 10 Magnox Sites. This document contains baseline environmental information and other relevant environmental data.

STRATEGIC ENVIRONMENTAL ASSESSMENT Site Specific Baseline

Wylfa Site
Cemaes
Ynys Môn (Anglesey)
LL67 0DH

Wylfa Site

Wylfa Site is an operational twin reactor Magnox station located on the north coast of the Isle of Anglesey, North Wales. It is located adjacent to a headland on the Irish Sea coast from which it draws cooling water supplies. This power station site covers an area of 21 hectares¹. The following describes the key dates for Wylfa Site:

- Construction of Wylfa Site commenced in 1963, and electricity was first supplied to the grid in 1971. It was the final, largest and most powerful station constructed as part of the Magnox programme¹.
- The site is currently planned to cease electricity generation in 2012^a after 41 (43) years of operation¹.
- Defuelling of the reactors is scheduled to be completed by 2015 (likely 2017 if extended generation is achieved)¹.
- The Care and Maintenance Preparations (C&MP) phase of the decommissioning process is scheduled to be completed in 2027 at which point the site will enter the Care and Maintenance (C&M) phase².
- Final Site Clearance (FSC) is scheduled to commence at the end of the C&M phase. All remaining structures on the site will be cleared by 2127².

1. Magnox Ltd (2011) Wylfa – Facts and Figures. Available at <http://www.magnoxsites.co.uk/our-sites/wylfa/facts-and-figures>

2. Magnox Ltd. (2011) Wylfa Site – Impact of MODP

^a This date may be subject to change in the future, depending on the outcome of the Generation Optimisation programme at Wylfa. There is scope to carry out Inter-Reactor Transfer, which will involve the transfer (using the fuelling machines and charge face dry cells) of partially irradiated fuel from Reactor 2 to Reactor 1, where the remaining fissile content of this fuel will be used. Regulator approval for this is currently pending but if successfully implemented the station lifetime could be extended to September 2014 using a single reactor.

Site End State Assumption

The planned end state for Wylfa Site is defined in the NDA Strategy Document 2011. This states: *'Radioactive and non-radioactive contamination will be reduced to meet the requirements of the relevant regulatory regime for the next planned use of the site and the current use of adjacent land. Where the next planned use no longer requires a nuclear site licence, radioactive contamination will be reduced to meet the criteria for delicensing, with any remaining radioactive substances being subject to the relevant environmental permitting regime. The physical state of designated land will be made suitable for the next planned use of the site; structures and infrastructure will be made safe or removed where necessary, having first explored opportunities for their re-use.'*

Current Environment Baseline

Table 1: Baseline Data for all SEA Objectives for Wylfa Site

SEA Objective	Environmental Baseline Data	References
Air Quality	<p><u>Radioactive Discharges</u></p> <ul style="list-style-type: none"> As one of the later Magnox stations, Wylfa's reactor cores are enclosed within Pre-stressed Concrete Pressure Vessels (PCPVs, which also serve as radiation 'bioshields'), so airborne activation products are not produced and vented from the bioshield continuously as part of ordinary operations. Periodic venting of reactor coolant gas is carried out as part of operations, including refuelling of the reactors. This will cease when generation ends in 2012 (or 2014). Nuclear operations such as waste retrieval and use of the active waste incinerator that occur during operations and also as part of decommissioning works result in minor but regular aerial discharges of radioactivity. <p><u>Conventional Discharges</u></p> <ul style="list-style-type: none"> Vehicles, diesel driven generators / pumps and gas turbines are employed on Wylfa Site, which are sources of air quality contaminants including NO_x (oxides of nitrogen), SO_x (oxides of sulphur), O₃ (ozone) and PM₁₀ (particulate with a diameter <10µm). These sources run only intermittently, and due to the rural nature of the site average levels of these pollutants are likely to be low. Discharges from these sources will likely remain steady throughout the C&MP phase. Dust will be generated from construction and demolition activities undertaken on the site as part of C&MP. Mitigation of this dust will be undertaken. 	
Global Change Energy	Climate and	
Biodiversity, Flora and Fauna	<ul style="list-style-type: none"> Throughout its lifetime Wylfa Site has drawn power from the National Grid to satisfy domestic power needs. The use of this energy has resulted in indirect CO₂ emissions, due to the mixed generation used in the UK. In addition to grid supplies, the site has several essential items of plant for the provision of back up power that are fossil fuel powered. At Wylfa Site this auxiliary equipment consists of gas turbines (primary and auxiliary), diesel generators and diesel-driven fire pumps. These machines are not in constant use; instead they are there for emergencies, but are regularly run for testing purposes. A number of vehicles are based at Wylfa Site which are either used within the site footprint or move from the site to further afield (e.g. vehicles used in carrying out the District Survey), and have associated carbon emissions. Indirect carbon emissions originate from the use of hire vehicles by site personnel when travelling on company business in addition. The site incinerator, which is used for combustible LLW, is also a source of CO₂ emissions. Magnox Ltd. has registered under the Carbon Reduction Commitment (CRC) and also has a company-wide Energy Efficiency Policy. Both of these schemes are currently being implemented on a site by site basis, with the aim of minimising greenhouse gas emissions across the company. Additionally, Wylfa's combustion plant is covered by the EU Emissions Trading Scheme. <ul style="list-style-type: none"> Wylfa Site is situated in a rural setting, and has 9 designated areas in close proximity. These designated areas are: <ul style="list-style-type: none"> Ynys Feurig, Cemlyn Bay and The Skerries Special Protection Area 	1. Magnox North (2008) Wylfa Site EIADR Environmental

	<ul style="list-style-type: none"> • Ynys Feurig, Cemlyn Bay and The Skerries Site of Special Scientific Interest (SSSI) • Cemlyn Bay Special Area of Conservation • Isle of Anglesey Area of Outstanding Natural Beauty (AONB) • Tre'r Gof SSSI • Cemlyn Bay SSSI • Cae Gwyn SSSI • Llyn Llygeirian SSSI • Henborth Geological SSSI ¹. • Due to these designations the coastline adjacent to Wylfa is also classified as a European Marine Site ^b. • The site Biodiversity Action Plan considers how the site manages its impacts on local ecosystems. • The Environment Agency (EA) concluded that exposure to ionising radiation from authorised discharges of radioactivity from the UK's nuclear installations did not significantly impact wildlife in England and Wales ². 	<p>Statement 2. Environment Agency (2002) Impact Assessment of Ionising Radiation on Wildlife</p>
<p>Landscape and Visual</p>	<ul style="list-style-type: none"> • Wylfa Site is located on the north coastline of the Isle of Anglesey ¹. • Rocky outcrops forming small cliffs up to 15m Above Ordnance Datum comprises the shoreline to the east and west of Wylfa. The landscape surrounding the site is generally undulating or flat and semi-open with areas of woodland and small flat agricultural fields ². <ul style="list-style-type: none"> • The reactor buildings and other site structures are highly visible from vistas throughout the surrounding countryside at short distances, and are less obtrusive at medium-long distances ². 	<p>1. Ordnance Survey (2011) 1:25,000 Sheet 262, Anglesey West 2. Magnox North (2008) Wylfa Site EIADR Environmental Statement (ES)</p>
<p>Cultural Heritage</p>	<ul style="list-style-type: none"> • There is 1 Scheduled Ancient Monument near to Wylfa Site, at Llanfechell. • There are 3 Listed Buildings near to Wylfa Site, which are all Grade II and situated in close proximity to the site. • There is 1 entry in the draft Register of Landscapes, Parks and Gardens of Special Historic Interest near to Wylfa Site (Cestyll Gardens, which is in close proximity to the site), as listed by Countryside Council for Wales. • The reactors at Wylfa represented the culmination of the Magnox Programme, and paved the way for the subsequent AGR Programme. Despite this important industrial heritage, there are no known plans to preserve any physical part of the station after shutdown. 	<p>1. Magnox North (2008) Wylfa Site EIADR ES</p>
<p>Groundwater, Geology and Soils</p>	<ul style="list-style-type: none"> • Made Ground underlies a portion of the site itself, and consists of reworked till and bedrock. The natural superficial deposits in the Wylfa Site locality consist of Glacial Till. This consists of two predominant types of drift deposit; one being silty gravelly clay and a localised sand / gravel. Peat is also found throughout the till. • The bedrock at Wylfa Site consists of the pre-Cambrian New Harbour Group of the Mona Complex. This Group consists of a sequence of metamorphosed sediments dominated by mica-schist, phyllites, jasper and pelitic lava. To the immediate north west of the site, at Wylfa Head the bedrock consists of the Gwna Group which includes phyllite, quartzite, jasper, lavas and tuffs. Faulting and crush zones have resulted in a complex amalgamation of these rocks underneath the site. Outcrops of extrusive igneous material are present to the south of the turbine hall, to the west of the station, and in Wylfa Head. • The superficial deposits at Wylfa Site are considered a non aquifer, with the exception of a small area to the east of the 	<p>Magnox North (2008) Wylfa Site EIADR Environmental Statement</p>

^b Where an SPA or SAC is continuously or intermittently covered by tidal waters or includes any part of the sea adjacent to the UK, the site is referred to as a European Marine Site.

	<p>site which is classified as Minor aquifer. It is believed that perched groundwater may be present in the Made Ground on site.</p> <ul style="list-style-type: none"> The bedrock at Wylfa Site is considered a non aquifer. However, it is believed that entry and movement of groundwater occurs in the rock via fractures, faults and crush zones. The shallow aquifer in the drift deposits are locally abstracted for agricultural use, and additionally springs are marked on maps of the area. The soil in the area surrounding Wylfa Site is classified as a sandy loam. <p><u>Land Quality.</u></p> <ul style="list-style-type: none"> Wylfa Site is considered to have very limited amounts of radioactive and conventional land contamination. Opportunistic sampling of soils at several locations around the site did not reveal any issues with either radiological or chemical contaminants. As such, not even a cursory campaign of investigation, and certainly not a planned, complex and extended campaign of sampling and monitoring is required at the site. 	
<p>Surface Water Resources and Quality</p>	<ul style="list-style-type: none"> The nearest water body to Wylfa Site is the Irish Sea, to the immediate north. The Afon Wygyr drains the land to the south and east of the site, and a small spring-fed stream is located to the south of the site, which flows towards Poth-y-Pistyll¹. The Bathing Water quality on the Anglesey coastline in the site's locality is considered good. The nearest sampling point is situated approximately 4km to the east at Cemaes Bay, and was considered to be of higher quality². This point is situated at a distance from the site, so may not accurately reflect water quality immediately adjacent to the site. A 1 in 10,000 water level on the adjacent coast would equate to 9.4mAOD, which would not affect the majority of the site which is situated at 12mAOD (the cooling water inlets would be affected but this would not compromise nuclear safety). Aqueous effluent discharges and cooling water discharges are made to the Irish Sea. Cooling water is dispersed via a culvert at the northeast of the site. The dispersion characteristics of the Irish Sea are affected by factors including flow rate, sediment load, sedimentation rate, freshwater / seawater mixing rate and tidal range and atmospheric conditions. Waterbodies containing clay mineral-rich sediments may have higher uptake potential for radionuclide anions such as Cs-137. 	<ol style="list-style-type: none"> Magnox North (2008) Wylfa Site EIADR Environmental Statement Environment Agency (2011) Bathing Water Quality
<p>Waste</p>	<ul style="list-style-type: none"> Both operational and decommissioning activities at nuclear sites generate radioactive and conventional waste. LLW is generated at Wylfa Site from a range of routine operational and decommissioning activities, and comprises a range of different materials. The baseline for LLW is to incinerate on site where possible (for combustible LLW), and to package non-incinerable waste and send it to the Low Level Waste Repository (LLWR) near Drigg in Cumbria for disposal. Opportunities to characterise or decontaminate to Very Low Level Waste (VLLW) or exempt (for permitted landfill), size reduce, incinerate or metal melt, in order to reduce LLWR consignments are actively sought. Intermediate Level Waste (ILW) is generated from both operational and decommissioning activities. It has accumulated at several locations at Wylfa Site. Where appropriate, ILW will be retrieved during C&MP when ILW storage facilities become available on site. The exception to this are some Miscellaneous Activated Components (MAC) stored in vaults in the PCPVs which will be retrieved during FSC. <p><u>Site Waste Strategy Baseline</u></p> <ul style="list-style-type: none"> The use of self-shielding Ductile Cast Iron Containers (DCICs) for interim storage and eventual final disposal of solid and wet (which is dried within the container) ILW is being pursued by Magnox Ltd., and is currently planned to be 	<ol style="list-style-type: none"> Magnox Ltd (2011) Wylfa IWS DECC (2011) Implementing Geological Disposal Annual Report April 2010 – March 2011 Walters S (2009) Fuel Element Debris Status Overview

	<p>implemented at Wylfa Site. This is supported by generic and site-specific options studies, but will also be subject to regulatory approval.</p> <ul style="list-style-type: none"> The waste packages will be emplaced in on-site storage facilities during the interim period pending eventual phased transfer to the UK national Geological Disposal Facility (GDF) circa 2040 (but possibly as early as 2029) ². Magnox Fuel Element Debris (FED) was not generated at Wylfa because desplitting of spent fuel elements was not undertaken at the site, so accumulation of this type of waste did not occur ³. 	
<p>Traffic and Transport</p>	<ul style="list-style-type: none"> The site access road connects directly to the A5025. This road links to the national motorway network at Jct. 12, M53 via the A55 trunk road (North Wales Expressway) ¹. The nearest railhead to Wylfa Site is located on the North Wales Coast Line, near to Valley Railway station ². This fully operational line runs regular passenger and freight services. The nearest passenger rail station is either Holyhead or Valley station. 	<ol style="list-style-type: none"> Ordnance Survey (2011) 1:25,000 Sheet 262, Anglesey West Magnox North (2008) Wylfa Site EIADR Environmental Statement
<p>Land Use and Material Assets</p>	<ul style="list-style-type: none"> Wylfa Site occupies an area of 21 hectares on an overall NDA estate of 113 hectares ¹. <ul style="list-style-type: none"> 232 hectares of NDA-owned land has been sold to Horizon Nuclear Power for the potential future construction of a 'B' power station site ². Wylfa Site consists of a single reactor block, turbine hall, dry fuel storage buildings, various ancillary buildings, access roads, grassy areas and areas of hardstanding. The surrounding area is rural in nature and is used primarily for agricultural and recreational purposes <ul style="list-style-type: none"> Notable uses in proximity to Wylfa Site include the Anglesey Coastal Footpath, which passes to the immediate east and south of the site footprint ³. Wylfa Site incorporates a significant quantity of material that is potentially eligible for direct reuse or recycling once generation has ceased and the site is undergoing decommissioning: <ul style="list-style-type: none"> This includes a substantial quantity of recyclable metal in the turbine hall, the reactor internals (boilers, pressure vessel liner) and incorporated into the PCPVs (stressing cables, Pressure Vessel Cooling System pipework), and large devices such as the gas circulators ¹. A proportion of this recyclable metal will be made available for recycling during the C&MP phase, such as the turbine hall deplanting and demolition and other general building dismantling. The PCPVs and their contents will be dismantled at FSC, so a significant quantity of the recyclable metal on site will be produced at this time. A proportion of this material will be classified as ILW (activated reactor components in particular) so will likely not be suitable for recycling (and will likely be packaged and consigned to the GDF), but the remainder will be LLW or exempt, and as such eligible for recycling and reuse within or outwith the nuclear industry ¹. A large volume of inert concrete and masonry rubble will be produced through demolition activities during C&MP and FSC, and will likely be reused on- or off-site as infill material, or similar ⁴. 	<ol style="list-style-type: none"> NDA (2011) Strategy Document Horizon Nuclear Power (2011) http://www.horizonnuclearpower.com/wylfa Ordnance Survey (2011) 1:25,000 Sheet 262, Anglesey West Magnox Ltd. (2011) Wylfa Site IWS
<p>Noise and Vibration</p>	<ul style="list-style-type: none"> The Baseline Noise Survey Data (L_{Aeq}, dB(A), Wylfa generating, 2008) is as follows: <ul style="list-style-type: none"> The Firs / Tregele – 50.4 Cafnan – 55.2 	<p>Magnox North (2008) Wylfa Site EIADR Environmental</p>

	<ul style="list-style-type: none"> • Haul-a-Gwynt – 37.7 • Cemaes Bay – 39.3 • The criteria for the significance of noise are the proximity of noise sources to the receptors, and the presence of any screening / nature of the ground between the source and the receptor . • Noise and vibration originate from a number of sources at Wylfa Site. <ul style="list-style-type: none"> • Upon the cessation of generation the profile of noise and vibration from the site will change, but will remain significant due to the nature of decommissioning works. 	Statement
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Table 2: Environmental Discharge Data for Baseline Years 2008 – 10 for Wylfa Site

In addition to the baseline information, which describes the permanent, semi-permanent and inherent features and impacts of Wylfa Site and its surrounding area, the following table outlines discharge data for the site for particular years, and how these quantities will likely change in future. This is intended to provide a quantitative ‘snapshot’ of the features of the site and impact that it has (and is anticipated to have in future), in order to supplement the baseline information.

SEA Objective	Environmental Discharge Data	Future Changes in Environmental Discharges	References
Air Quality	<ul style="list-style-type: none"> • The following describes the composition of radionuclides comprising the total radioactivity released by Wylfa Site to atmosphere in 2008: <ul style="list-style-type: none"> • 2.63 TBq of H-3 (15 % of annual limit) • 1.49 TBq of C-14 (65 % of annual limit) • 3.39 x 10⁻⁵ TBq of beta particulate (4.8 % of annual limit)¹. • These 2008 discharges were assessed to result in doses to the critical groups of 27 µSv (from consumption of milk and vegetables, with infants as the most exposed group; 2.7 % of the public dose limit)². 	<ul style="list-style-type: none"> • Discharges of radioactivity to the atmosphere will decrease significantly upon the cessation of generation. • As decommissioning progresses through the C&MP phase the trend will be for discharges to remain steady or continue to decrease. • However, certain decommissioning activities such as the retrieval, treatment and passivation of wastes may result in short term spikes in aerial discharges of radioactivity. • Once the major hazard reduction projects have been completed and the site enters the extended, quiescent C&M phase, aerial discharges of radioactivity will be extremely low. • The degassing of desiccant material in storage, the PCPV and core graphite may result in very minor discharges of tritium. • Dust from demolition and traffic movement may affect the local area during all 3 decommissioning phases. Civil works will be a source of dust. • FSC will result in a temporary increase in aerial discharges of radioactivity. This is because the radioactive reactor cores and associated equipment and infrastructure will be dismantled at this point. 	<ol style="list-style-type: none"> 1. FSA (2009) Radioactivity in Food and the Environment 14 2. Magnox North and South (2008) Monitoring Our Environment

		<p>Detailed estimates for the discharges from this process have not been made, but will likely comprise particulate as major remaining structures are demolished.</p> <ul style="list-style-type: none"> • Retrieval of waste packages from site for transfer to the GDF when it becomes available during the C&M phase will result in traffic movements to the site. This retrieval will likely be phased over an extended period of time, so the impact from this is likely to be limited. 	
<p>Global Climate Change and Energy</p>	<ul style="list-style-type: none"> • In 2010 927483 MWh of energy was used at Wylfa Site • This figure is much higher than at defuelling / decommissioning sites due to 'works usage' i.e. energy consumed continuously by plant that facilitates generation such as the gas circulators and cooling water pumps. This power requirement is deducted from the output of the station. • Use of the plant including the gas turbines and the incinerator resulted in the direct emission of 5583 tonnes of CO₂¹. • 243.9 tonnes of CO₂ were indirectly emitted from domestic energy consumption¹. 	<ul style="list-style-type: none"> • The site will draw power from the grid and operate plant and vehicles for decommissioning works such as ILW processing and for general domestic needs until the completion of C&MP. • During C&M the site's power usage will be very low, but periodic inspections and maintenance will result in very small spikes in energy usage. • The retrieval of waste packages from the site ILW storage facilities during C&M will result in intermittent vehicle movements to and from the site. Energy use and the operation of numerous vehicles will resume on a significant scale during FSC. • However, the types of the vehicles in use and the nature of energy mix in use in the UK at these dates cannot be predicted, thus the associated CO₂ emissions relative to the present are unknown. 	<p>1. Magnox Ltd. (2010) Wylfa NSP10</p>
<p>Surface Water Resources and Quality</p>	<ul style="list-style-type: none"> • The following describes the composition of radionuclides comprising the total radioactivity released by Wylfa Site to the marine environment in 2008: <ul style="list-style-type: none"> • 3 TBq of H-3 (20 % of annual limit) • 0.012 TBq of other radionuclides (1.1 % of annual limit)¹. • These 2008 discharges were assessed to result in doses to the critical groups of 8.5 µSv (from external exposure and consumption of seafood; 0.85 % of the public dose limit)². 	<ul style="list-style-type: none"> • Discharges of aqueous radioactivity will decrease significantly upon the cessation of generation. • As decommissioning progresses through the C&MP phase the trend will be for discharges to continue to decrease. • However, certain decommissioning activities such as the as the retrieval, treatment and passivation of wastes may result in short term spikes in aqueous discharges of radioactivity. • Once the major hazard reduction projects have been completed and the site enters the extended, quiescent C&M phase, aqueous discharges of radioactivity will be 	<p>1. FSA (2009) Radioactivity in Food and the Environment 14 2. Magnox North and South (2008) Monitoring Our Environment 3. Hunt C. (2011) BPM for Water Management during C&M, Bradwell Site, BRAD/BPM/017^c</p>

^c This document pertains specifically to Bradwell Site, but the assertions made in this report regarding water management and discharges during the C&M phase are applicable to the whole Magnox fleet.

		<p>very low, but not zero³.</p> <ul style="list-style-type: none"> It is possible that during the decades-long C&M phase percolating ground- and rainwater may entrain and mobilise activity from contaminated structures such as areas of the Safestore buildings³. Routine monitoring and inspection will identify if this is occurring, and intervention will be undertaken in line with the requirements of the C&M Safety Case to ensure that any activity does not migrate off site. FSC will result in temporary discharges of aqueous radioactivity, primarily from waste treatment as the radioactive reactor cores and associated equipment / infrastructure are dismantled. Detailed estimates for the discharges due to this have not been made, however. 	
Waste	<ul style="list-style-type: none"> The following waste metrics are for 2010: Wylfa Site produced 99.5m³ of LLW from operational activities which has been reused, recycled or disposed of¹. 43.5m³ of combustible LLW was treated and 56m³ of LLW was disposed to LLWR¹. 408.6 tonnes of general waste was produced by the site from operational activities. 67% of this total was recycled¹. 128.9 tonnes of inert waste was produced from operational activities. 95% of this total was recycled¹. Reactors 1 and 2 are operational². 	<ul style="list-style-type: none"> The anticipated future arisings of radioactive and conventional waste are outlined in Table 4. 	<p>1. Magnox Ltd. (2010) Wylfa NSP10 2. Magnox Ltd. (2011) Wylfa Site IWS</p>

The following table illustrates further parameters that are significant for the site.

Table 3: Additional Data for baseline Year 2010 for Wylfa Site

SEA Objective	Additional Data	Changes in Additional Parameters	References
Surface Water Resources and Quality	<ul style="list-style-type: none"> In 2010 the site consumed 560569 m³ of mains water This figure excludes cooling water, which is drawn directly from and returned to the Irish Sea via its own isolated cooling water (tertiary) circuit. 	<ul style="list-style-type: none"> Water consumption will drop significantly upon the cessation of generation. 	1. Magnox Ltd. (2010) Wylfa NSP10
Economy, Society and Skills	<ul style="list-style-type: none"> Wylfa Site is located in rural area of the Isle of Anglesey, North Wales. The nearest settlements within the locality of Wylfa Site are Cemaes to the east and Llanfechell to the southeast, but there are no large settlements within 10km of the site (Holyhead is approximately 17km distant). There are numerous small villages and settlements in the area in addition to these larger towns¹. The population of Anglesey was 68600 during 2010². Anglesey had a working population of 31500 during 2010². <ul style="list-style-type: none"> The dominant working sectors in Anglesey during 2008 were Public Administration, Education and Health (5400, 28 %) and Distribution, Hotels and Restaurants (4800, 25%) In December 2010, 644 staff (including project staff), as well as contractors* were directly employed by Wylfa Site³. Employment in the Electricity, Gas and Water Supply industry in Anglesey was not listed, but employment at Wylfa Site is likely to have a measureable effect against the total working population of this district. In 2010 (12200, 29 %) of the population were employed to NVQ4 level or above. Anglesey is currently subject to Convergence Funding from the EU, and will continue to be until 2013⁴. The number of personnel employed on site will decrease after the cessation of generation and again significantly after the completion of C&MP. <p>* Contractor numbers are variable, depending on the work being undertaken at the site.</p>	<ul style="list-style-type: none"> The number of personnel employed on site will decrease significantly after the completion of C&MP. Personnel numbers at the site will increase again for the duration of FSC. 	<ol style="list-style-type: none"> Ordnance Survey (2011) 1:25,000 Sheet 262, Anglesey West Office for National Statistics (2011) Official Labour Market Statistics, available at http://www.nomisweb.co.uk/ Magnox Ltd (2011) Industrial Safety Stats @ December 2010 EU (2011) Cohesion Policy 2007 – 13, available at http://ec.europa.eu/regional_policy/atlas2007/index_en.htm

<p>Traffic and Transport</p>	<ul style="list-style-type: none"> • The Annual Average Daily Traffic (AADT) from all traffic movements on the A5025 (at a point approximately 4km to the east of site) from recent measurements was 3394, of which 93 were Heavy Goods Vehicle (HGV) movements. • On the A5025, to the southwest of the site close to the village of Valley the AADT from all traffic movements was 5872, of which 225 were HGV movements. • The proportion of these total movements that are directly attributable to Wylfa Site is low. 	<ul style="list-style-type: none"> • It is anticipated that general traffic and HGV movements will remain steady or increase during the remainder of the C&MP phase at Wylfa Site. • Movement of materials for potential future projects e.g. delivery of DCICs to site and construction of ILW storage facilities will generate extra traffic movements, as will movement of demolition waste and other inert material for reuse or conventional disposal. • A similar increase in traffic flows on local roads can be expected for the duration of the FSC phase. 	<p>Department for Transport (2011) AADF Home, available at: http://www.dft.gov.uk/matrix/search.aspx</p>
<p>Health and Safety</p>	<ul style="list-style-type: none"> • Wylfa Site had 5 reportable Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) incidents during 2010 • The Occupational Safety and Health Administration Total Recordable Incident Rate (OSHA TRIR) for Wylfa Site in 2010 was 0.48 	<ul style="list-style-type: none"> • The current Health and Safety regime will likely continue to be enforced for the remainder of the C&MP phase. • Comparable Health and Safety standards to the current ones will likely be enforced during the periods of the C&M phase when personnel are on site for waste package retrieval activities, inspections etc. • Comparable Health and Safety standards will likely be enforced during the FSC phase. 	<p>Magnox Ltd (2011) Industrial Safety Stats @ December 2010</p>

Table 4: Future Radioactive and Conventional Waste Arisings for Wylfa Site ^d

Category of Waste	Time of Arising	Unpackaged Volume (m ³)
LLW	C&MP	2748.2
	C&M	144
	FSC	40841.3
ILW	C&MP	949.1
	C&M	0
	FSC	5754
Inert, hazardous and non-hazardous conventional	C&MP	123,971.1
	C&M	50
	FSC	175,072.7

(Wylfa Site IWS, 2011)

^d Packaged volume is between 20 – 50% greater than the unpackaged volume, depending on the type of container and encapsulant applied (UK Radioactive Waste Inventory, 2007).

Environmental Points of Interest for Wylfa Site

Land Quality

- Land quality at Wylfa Site is of very low concern due to the lack of significant areas of even low levels of radioactive and non-radioactive contamination. Opportunistic sampling of soil and groundwater was carried out in 2004 at a number of locations around the periphery of the site. This sampling indicated that there are no major contamination issues.
 - There were however a couple of points of note relating to chemical contamination. Organic and inorganic species were found to be below guideline levels, but hydrocarbons were detectable in soils samples taken to the rear of the gas turbine fuel tanks and adjacent to the former sewage works.

Absence of Hazard Sources

- The absence of a ponds complex at Wylfa means that what has been a major source of contamination at several other Magnox Sites, and a major potential radiological hazard in general, has never been present on this site. Also, the need for one major decommissioning effort at the site is not there, and although the dry cell will require decommissioning, the levels of contamination there should be considerably lower than that found within pond structures at other Magnox Sites.
- As no Magnox FED has been accumulated at Wylfa, no consideration is required for the retrieval, containerisation, or dissolution and discharge of this material.

Climate Change and Flooding

- As with all of the coastal Magnox Sites an ongoing issue for Wylfa during the C&M phase is the vulnerability of the site to flooding due to raised sea level and more frequent storm surges brought about by the anticipated effects of climate change in the coming decades. This is due to the coastal situation of the site.
 - The C&M phase at the site, during which the reactors will be in Safestore, is scheduled to last until 2092, by which approximate time (2090-99) the Intergovernmental Panel on Climate Change has projected that the worst case scenario (emission scenario A1FI) of sea level rise is in the range 0.26 – 0.59m (relative to 1990-99 levels) ¹. Different areas of the site are situated at 3 different levels, all of which are significantly above sea level: the switch houses are at 16-20m Ordnance Datum (mAOD), the reactor block and turbine hall at 10-14 mAOD, and the cooling water pumphouse slopes from 10 – 6 mAOD ². As such, the areas of the site containing radioactive materials are situated well above sea level. The flood defences at Wylfa consist of a shallow gradient rock foreshore which is topped off by a sea wall in localised areas. The high integrity of the cliffs at Wylfa Head generally negate the need for additional defences ².
 - Any further measures necessary to prevent flooding of the site during the C&M period, such as improvements to the flood defences, will be identified through the Periodic Safety Review. Furthermore, the rise in sea level during the C&M period will be gradual, allowing the advance planning of any necessary mitigation measures.

1. IPCC (2007) Projections of Future Change in Climate, http://www.ipcc.ch/publications_and_data/ar4/wg1/en/spmsspmp-projections-of.html

2. Magnox North (2008) Wylfa Site EIADR Environmental Statement

Figure 1: Statutorily Designated Areas in the Vicinity of Wylfa Site

