Magnox

Berkeley Site

Strategic Environmental Assessment Site Specific Baseline

September 2014

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 – September 2014

Berkeley Site
Berkeley
Gloucestershire
GL13 9PA

Berkeley Site

Berkeley Site (hereafter referred to as the Site) is twin reactor Magnox station undergoing decommissioning, and is located close to the town of Berkeley in the Stroud District of Gloucestershire, South West England. It is situated on the eastern bank of the River Severn, from which it drew cooling water supplies during its operational phase. The site covers an area of 11 hectares (27 including Berkeley Centre).[1a] The following describes the key dates for the site:

- Construction of the site commenced in 1957, and electricity was first supplied to the grid in 1962.[1]
- The site ceased electricity generation in 1989 after 27 years of operation.[1]
- Defuelling of the reactors was completed in 1992.[1]
- Additional funds have been made available to Berkeley Site as part of Magnox Optimised Decommissioning Plan (MODP), so certain areas of work have been accelerated to facilitate entry to Care and Maintenance (C&M) by the anticipated date.[2]
- Both of the reactor buildings were put into the Safestore state in 2010.[b]
- The Care and Maintenance Preparations (C&MP) phase of the decommissioning process is scheduled to be completed in 2021 at which point the site will enter the Care and Maintenance (C&M) phase.[2]
- 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 2079.[2]

1. Magnox Ltd (2014) Berkeley. Available at http://www.magnoxsites.co.uk/site/berkeley/
2. Nuclear Decommissioning Authority (NDA) Business Plan, 2012-2015

[a] *Immediately adjacent to Berkeley Site is the Berkeley Centre complex. Berkeley Centre consists of a redundant laboratory and office complex (formerly the Berkeley Nuclear Laboratories / Berkeley Technology Centre) as well as a number of office and other buildings that are still in use. Berkeley Site and Centre form two separate sites, having separate boundaries, with only Berkeley Site being subject to a Nuclear Site Licence. Even though both of these sites are owned by the NDA, this Strategic Environmental Assessment Baseline considers Berkeley Site only.*

[b] *As a result of being placed in this state, the reactor buildings are now referred to as the 'Safestore buildings'*

Site End State Assumption

The planned end state for Berkeley 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 Berkeley Site

SEA Objective	Environmental Baseline Data	References
Air Quality & Dust	*Radioactive Discharges* • Aerial discharges of radioactivity have reduced since the cessation of generation. The reactor cores at Berkeley are enclosed within Steel Pressure Vessels (SPVs), which are in turn contained within concrete structures ('bioshields') designed to protect site personnel from radiation originating from within the cores. During operations, discharges of aerial activity resulted from ventilation of the bioshield voids, which released gaseous activation products when the reactors were under load. • Periodic venting of reactor coolant gas was carried out during the operational phase. This has ceased since the end of generation. • Due to the reactors at Berkeley having been placed in the Safestore state only estimation of gaseous discharges from degassing of the graphite cores is now required, rather than active measurements which are required at other decommissioning sites. • Nuclear operations including waste retrieval which are being undertaken as part of the decommissioning works result in minor but regular aerial discharges of radioactivity.	*1. DEFRA (2014) Air Quality, http://aqma.defra.gov.uk/aqma/list.php*

	Conventional Discharges • Vehicles and diesel generators are employed on the site, which are sources of air quality contaminants including NO_x (oxides of nitrogen), SO_x (oxides of sulphur) and PM_{10} (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 is currently, and will in future, be generated from construction and demolition activities undertaken on the site as part of C&MP. Mitigation of this dust is undertaken in all instances. • The location of the site is not currently designated an Air Quality Management Area (AQMA).[1]	
Global Climate Change and Energy	• Throughout its lifetime the site has drawn power from the National Grid to satisfy domestic power needs (heavy plant items such as the gas circulators and cooling water pumps were driven by power derived directly from the station's output). The use of this energy has resulted in indirect CO_2 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, which are fossil fuel powered. This auxiliary equipment consists of diesel generators. These machines are not in constant use; instead they are for emergencies, but are regularly run for testing purposes. • A number of vehicles are based at the site, which have associated carbon emissions. Indirect carbon emissions originate from the use of hire vehicles by site personnel when travelling on company business in addition. • 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. *Climate Change and Flooding* • As with all of the coastal Magnox Sites, an on-going issue for Berkeley 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. The site is situated on the low-lying flood plain of the River Severn, which is highly tidal at that location and historic instances of storm surge flooding (Bristol Channel Flood 1607) means that the site is potentially vulnerable.	

	• The C&M phase at the site, during which the reactors will be in Safestore, is scheduled to last until 2088, 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 1980-99 levels).[1] The site is situated at an elevation of approximately 10m above Ordnance Datum (mAOD), with the lowest area at 9.75 mAOD. The flood defences, which consist of a continuous embankment along to the shoreline (which curves inland around Berkeley Pill) adjacent to the site, and to the north and south. The minimum height of these defences is 9.72 mAOD. • 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.	
Biodiversity, Flora and Fauna	• The site is situated in a predominantly rural setting, and has 4 statutorily designated areas in close proximity. • These designations recognise the fact that the Severn is an internationally-important habitat for migratory fish and wintering birds, with the inter-tidal mudflats being of key importance to the migration of several internationally-protected bird species.[1] • These designated areas are: ○ Severn Estuary Site of Special Scientific Interest (SSSI) ○ Severn Estuary Special Area of Conservation (SAC) ○ Severn Estuary Special Protection Area (SPA) ○ Severn Estuary Ramsar Site.[1] • Due to these designations the coastline adjacent to Berkeley is also classified as the Severn Estuary European Marine Site.[3c] • In addition to the features associated with the estuary, there are extensive stretches of ancient hedgerow and an inland area of reed-bed, both of which are features ecological importance, in close proximity to the site. • The site Biodiversity Action Plan considers how the site manages its impacts on local ecosystems. This document is reviewed and updated on a bi-annual basis.	*1. Berkeley Site Environmental Impact Assessment Baseline Report* *2. Environment Agency (2002) Impact Assessment of Ionising Radiation on Wildlife* *3. Natural England (2011) England's European Marine Sites, available at http://www.naturalengland.org.uk/ourwork/marine/protectandmanage/mpa/europeansites.aspx*

[c] *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.*

	• 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]	
Landscape and Visual	• The site is located in Gloucestershire, in a predominantly rural area adjacent to the River Severn.[1] • The immediately surrounding flood plain landscape is flat and open, and consists of arable fields and wet alluvial pastures. The opposite bank of the Severn is characterised by steeply rising ground. • The Cotswold Escarpment is located several km to the east, and higher ground is also located on the opposite bank of the River Severn. • The site is prominent in the landscape locally (and in particular from the Severn Way coastal footpath), especially from the north where vegetation cover is less. At medium-long distances the site is prominent from vistas to the north, south and west (particularly Lydney Harbour).	*1. Ordnance Survey (2011) 1:25,000 Sheet 167, Thornbury, Dursley and Yate* *2. Berkeley Site Environmental Impact Assessment Baseline Report*
Archaeology & Cultural Heritage	• There is 1 Scheduled Ancient Monument near to the site, at Lydney Harbour on the western bank of the River Severn. • There are 2 Grade I* and 2 Grade II Listed Buildings within 5km of the site. • One of the listed buildings in the area is a Grade-II gazebo-type summerhouse, which is situated to the immediate north-west of the site boundary. • There is 1 entry in the draft Register of Landscapes, Parks and Gardens of Special Historic Interest near to the site (at Berkeley Castle), as listed by Natural England.	*Berkeley Site Environmental Impact Assessment Baseline Report*
Groundwater, Geology and Soils	• Made Ground directly underlies the site and consists primarily of reworked clay and bedrock. The natural superficial (drift) deposits near the site consist predominantly of layers silty clays and peats incorporating isolated pockets of glacial head sediments. • The bedrock at the site is the Triassic Mercia Mudstone, which consists of interbedded mud-, silt- and sandstones with gypsum inclusions and is weathered in its upper part. This unit overlies the Devonian Old Red Sandstone. • The superficial deposits at the site are considered a Minor aquifer. • The bedrock at the site is considered a non aquifer, although the laterally extensive sandstone bands within the Mercia	*1. Berkeley Site Environmental Impact Assessment Baseline Report*

	Mudstone are considered to be a Minor Aquifer. This is especially pronounced where the gypsum inclusions have dissolved to form cavities in the rock. Despite the geological units underlying the site generally being considered as non-aquifers, there is 1 licenced groundwater abstraction and 2 private abstractions for domestic use with 5km of the site. • The soils in the area surrounding the site are classified as seasonally wet deep clays, and are classified as a Grade 3 and 4 agricultural quality soil.[1] *Land Quality* • The site has limited amounts of radioactive and chemical land contamination. • Potentially radioactive land contamination is associated with leaks from the Original Ebb Tide Line, Gravity Active Drain, and Cooling Ponds Recirculation Pipe Trench. • Potentially chemical land contamination is associated with underground storage tanks, transformers and oil-filled cables. Poly-Chlorinated Biphenyl (PCB) contamination has been detected in the area of the former site substation (now part of the non-licensed site). • The installation of 12 new boreholes and refurbishment of 11 previously installed boreholes was carried out in 2008 – 09. Gamma monitoring of these boreholes, for the monitoring and detection of current and future soil and groundwater contamination, is on-going. • The site shall continue to manage land quality through the production and maintenance of a Land Quality file, Land Quality Characterisation Plan and Land Quality Strategy. • The site will also maintain and monitor appropriate arrangements for the control of work with potential implications associated with contaminated land	
Surface Water Resources and Quality	• The nearest watercourse to the site is the River Severn. Additionally, the Little Avon River (called Berkeley Pill in the vicinity of the site) drains into the River Severn approximately 0.4km to the north of the site, and Conigre Pill (which is culverted beneath the site) discharges immediately to the southwest of site.[1] • The ecological and chemical status of Berkeley Pill is considered poor under the Water Framework Directive.[2] • Areas of the site could potentially be affected by a 1 in 200 year tidal flooding event, and a study as part of the most recent Periodic Safety Review considered a combined extreme pluvial/fluvial event, and predicted that this could affect the Active Waste Vaults (AWV), so flood barrier protection has been installed.	*1. Ordnance Survey (2011) 1:25,000 Sheet 167, Thornbury, Dursley and Yate* *2. Environment Agency (2011) Water Framework Directive – River Basin*

	• Aqueous effluent discharges (and cooling water discharges during the operational phase) have always been made to the River Severn. Aqueous effluent is discharged from the site via a dedicated pipeline that was installed following the shutdown of the cooling water system, which had been the route for all liquid effluents previously. This dedicated line was designed to have as good as or better dispersion characteristics than the previous system, • Although the Severn adjacent to the site is tidal, it is not considered to be part of the Severn Estuary, as this is generally taken to be everything south of the Severn Bridge approximately 12km to the south of the site.	*Management Plans – Rivers*
Waste	• Both operational and decommissioning activities at nuclear sites generate radioactive and conventional waste. • Low Level Waste (LLW) is generated at the site from a range of routine operational and decommissioning activities, and comprises a range of different materials. • The baseline for LLW is to package the waste and send it to the Low Level Waste Repository (LLWR) near Drigg in Cumbria for disposal.[1] • Opportunities to characterise or decontaminate to Very Low Level Waste (VLLW, for controlled burial) or exempt (for permitted landfill), size reduce, incinerate or metal melt, in order to reduce LLWR consignments, are actively sought.[1] • The incineration facility at Hythe comprises a disposal route for solid LLW and organic liquids from the site. • Intermediate Level Waste (ILW) is generated from both operational and decommissioning activities. It has accumulated at several locations at the site. The majority of this will be retrieved during C&MP when an ILW store becomes available on site. The exception to this are some Miscellaneous Activated Components (MAC) stored in the vaults and within the concrete bioshield which will be retrieved for disposal during FSC.[1] • Due to the unique design of the fuel elements used at Berkeley, which comprised of graphite struts as well as magnesium non-oxidising alloy (Magnox), The Fuel Element Debris (FED) waste stream consists of Graphite, Magnox and Stainless Steel. • Additionally, some wastes from the adjacent laboratory complex (shielded area), including wastes from Post Irradiation Examination of fuels and materials testing (including graphite), were emplaced in the AWV.	*1. Magnox Ltd (2011) Berkeley Site IWS* *2. DECC (2011) Implementing Geological Disposal Annual Report April 2010 – March 2011*

	Site Waste Strategy Baseline • The use of self-shielding Ductile Cast Iron Containers (DCICs) for interim storage and eventual final disposal of solid and wet ILW has been developed by Magnox Ltd., and is planned to be implemented at the site. This is supported by generic and site-specific options studies, but will also be subject to regulatory approval. • The waste packages will be emplaced in the site ILW store for interim storage pending eventual phased transfer to the UK national Geological Disposal Facility (GDF) circa 2040 (but possibly as early as 2029).[2]	
Traffic and Transport	• The site access road connects to the A38 trunk road via Berkeley village. This road links to the national motorway network at either Jct. 13 or 14, M5.[1] • The nearest railhead to the site is located on the Sharpness Branch Line (which is operational but infrequently used). The nearest passenger rail station is Cam and Dursley station.	*1. Ordnance Survey (2011) 1:25,000 Sheet 167, Thornbury, Dursley and Yate*
Land Use and Material Assets	• The site occupies an area of 11 hectares (on an overall NDA estate of 27 hectares - the adjacent Berkeley Centre, which was delicenced in 2006, occupies an area of 16 hectares).[1] • The site consists of two Safestore buildings, the Active Waste Vaults complex, the Caesium Removal Plant, various ancillary buildings, access roads, grassy areas and areas of open hardstanding. • The surrounding area is rural in nature and is used primarily for agriculture and recreational purposes • Notable uses in proximity to the site include the Severn Way footpath, which runs around the edge of the Site footprint. The proximity of Sharpness Docks results in commercial shipping passing the site on the River Severn; several navigational aids for this shipping are located on the site. • The site incorporates a significant quantity of material that is potentially eligible for direct reuse or recycling: • A proportion of this recyclable metal will or has been made available for recycling during the C&MP phase. This includes a substantial quantity of recyclable metal in the boilers, the gas ducts, the SPV, and as rebar incorporated into large concrete structures such as the bioshield.[2] • During the operational phase the 16 boilers (8 per reactor) were located within structures separate from the reactor	*1. Magnox Ltd. (2011) Berkeley Site Profile, http://www.magnoxsites.co.uk/our-sites/berkeley* *2. Magnox Ltd. (2011) Berkeley Site IWS*

	buildings, connected by gas ducts. These housing structures were demolished after shutdown of the station, and the boilers themselves were lowered into cradles in a horizontal position adjacent to the Safestore buildings for an extended period. However, all of the boilers were removed from site and transported by sea to a metals recycling facility in Sweden for smelting and reuse in two batches in 2012-13, Using this approach, up to 95% of each 310 tonne boiler is recycled and released for reuse, representing a considerable saving of space at LLWR and a significant environmental benefit in terms of the use of the waste hierarchy. • The bioshield and the SPV will be dismantled at FSC, so a large quantity of 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 UK GDF), but the remainder will be LLW or exempt, and as such eligible for recycling and reuse within or outwith the nuclear industry.[2] • 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.[2]	
Noise and Vibration	• Noise and vibration originate from a number of sources at the site. • The Baseline Noise Survey Data ($L_{Aeq\ 1\ hour}$, dB(A) (Daytime)) (site undergoing decommissioning, 2006) is as follows: ○ Hamfield Cottages – 51.2 ○ Hamfield Farm – 40.4 ○ Severn Way Footpath – 42.4 ○ Woodlands Farm – 37.6.[1] • 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. • Since the cessation of generation the profile of noise and vibration from the site has changed, but remains significant due to the nature of decommissioning works.	*Berkeley Site Environmental Impact Assessment Baseline Report*

Table 2: Environmental Discharge Data for Baseline Years 2012/13 for Berkeley Site

In addition to the baseline information, which describes the permanent, semi-permanent and inherent features and impacts of Berkeley Site and its surrounding area, the following table outlines discharge data for the site in 2012 and 2013[d], 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 & Dust	• Total Alpha discharged to air in both 2012 and 2013 was below reporting threshold. • Total Beta and Gamma (excluding Tritium) to air in 2012 and 2013 was below reporting threshold. • Total Tritium to air in 2012 and 2013 was below reporting threshold.[1] The *total dose* from all pathways and sources of radiation is assessed to have been 0.014 mSv in 2012 which was less than 2 per cent of the dose limit, and up from 0.006 mSv in 2011. The higher value in 2012 was due to an increase in the dominant contributor, from external exposure over intertidal areas, mostly because gamma dose rates were measured on different types of substrate (near the Oldbury site) from one year to the next.[2] Berkeley and Oldbury sites are considered together for the purposes of environmental monitoring because the effects from both contribute to the same area.[2]	• Discharges of radioactivity to the atmosphere decreased significantly upon the cessation of generation. • As decommissioning progresses through the C&MP phase the trend will be for discharges to continue to remain steady or decrease. • However, certain decommissioning activities such as the as the retrieval, treatment and passivation of wastes may result in short term spikes in aerial discharges of radioactivity. At Berkeley the decommissioning of the Caesium Removal Plant (CRP) and the Active Waste Vault Retrieval (AWVR) projects will be a source of tritium releases, and undertaking these works may require a gaseous authorisation variation. • 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. • Dust from demolition and traffic movement may affect	*1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions* *2. CEFAS (Centre for Environment, Fisheries and Aquaculture Science) (2012) Radioactivity in Food and the Environment 18*

[d] *Data from 2012 and 2013 are presented to provide an indication of variances.*

		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. Detailed estimates for the discharges from this process have not been made, but will likely comprise particulate as major remaining structures are demolished. • Retrieval of waste packages from site for transfer to the Geological Disposal Facility, 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.	
Global Climate Change and Energy	• 2,874 MWh of energy was used at the site in 2012, decreasing slightly to 2,817 MWh in 2013. The slight decrease is attributed to the installation of a more efficient ventilation system. • Indirect CO_2 and other greenhouse gas emissions generated (including energy consumption and site diesel usage) was 2.8E-03 megatonnes in 2012 and 1.6E-03 megatonnes in 2013.[1]	• 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 store 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	*1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions*

		nature of energy mix in use in the UK at these dates cannot be predicted, thus the associated CO_2 emissions relative to the present are unknown.	
Surface Water Resources and Quality	• Total Alpha liquid discharges and Tritium discharges were below the reporting threshold in 2012 and 2013. • Total Beta Gamma (excluding Tritium) liquid discharges were 7.21E-04 TBq in 2012 and 1.10E-04 TBq in 2013. • Total Tritium liquid discharges were below the reporting threshold in 2012 and 2013.[1] Liquid radioactive wastes are discharged to the Severn Estuary. Discharges from Oldbury decreased in comparison to those in 2011, due to the closure of Reactor 1 in 2012. In 2012, tritium* concentrations in fish were measured below the LoD and detected in lower concentrations in shrimps compared to those in 2010 (not sampled in 2011). Very small concentrations of other radionuclides were detected but, taken together, were of low radiological significance.[2] ** Environmental dose data is a combined figure for Berkeley and Oldbury Sites, as the radiological impact of these sites is assessed together due to their spatial proximity.*	• Discharges of aqueous radioactivity decreased significantly upon the cessation of generation and dispatch of all the spent fuel to Sellafield. • 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 very low, but not zero [3]. • FSC will result in temporary discharge 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.	*1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions* *2. CEFAS (Centre for Environment, Fisheries and Aquaculture Science) (2012) Radioactivity in Food and the Environment 18*

Waste	• The following waste metrics are for 2012 and 2013: • In 2012 the site produced 2400m^3 of LLW from decommissioning activities which has been reused, recycled or disposed of. • 2382m^3 of LLW metal was recycled and 18m^3 of LLW was treated.[1] • In 2013 the site produced 4781.4 m^3 of LLW from decommissioning activities which has been reused, recycled or disposed of. • 4762.9m^3 of LLW metal was recycled and18.6m^3 was treated. • 239.2 tonnes of inert waste was produced by the site in 2012 from decommissioning activities. 100% of this total was recycled. • 523.1 tonnes of non-hazardous waste was produced in 2012 from decommissioning activities, 97% of this was recycled. • 2786.2 tonnes of inert waste was produced by the site in 2013 from decommissioning activities. 100% of this total was recycled.[1] • 139.3 tonnes of non-hazardous waste was produced in 2013 from decommissioning activities, 91% of this was recycled.[1]	• Two particular projects will result in quantities of radioactive waste during C&MP: • The AWVR project is a major undertaking at the site. The waste arises from materials and items from experimental work at the adjacent laboratories, which was consigned to these vaults in addition to power station operational wastes [2]. • The Caesium Removal Plant and shielded area is an on-going decommissioning project.	*1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions*

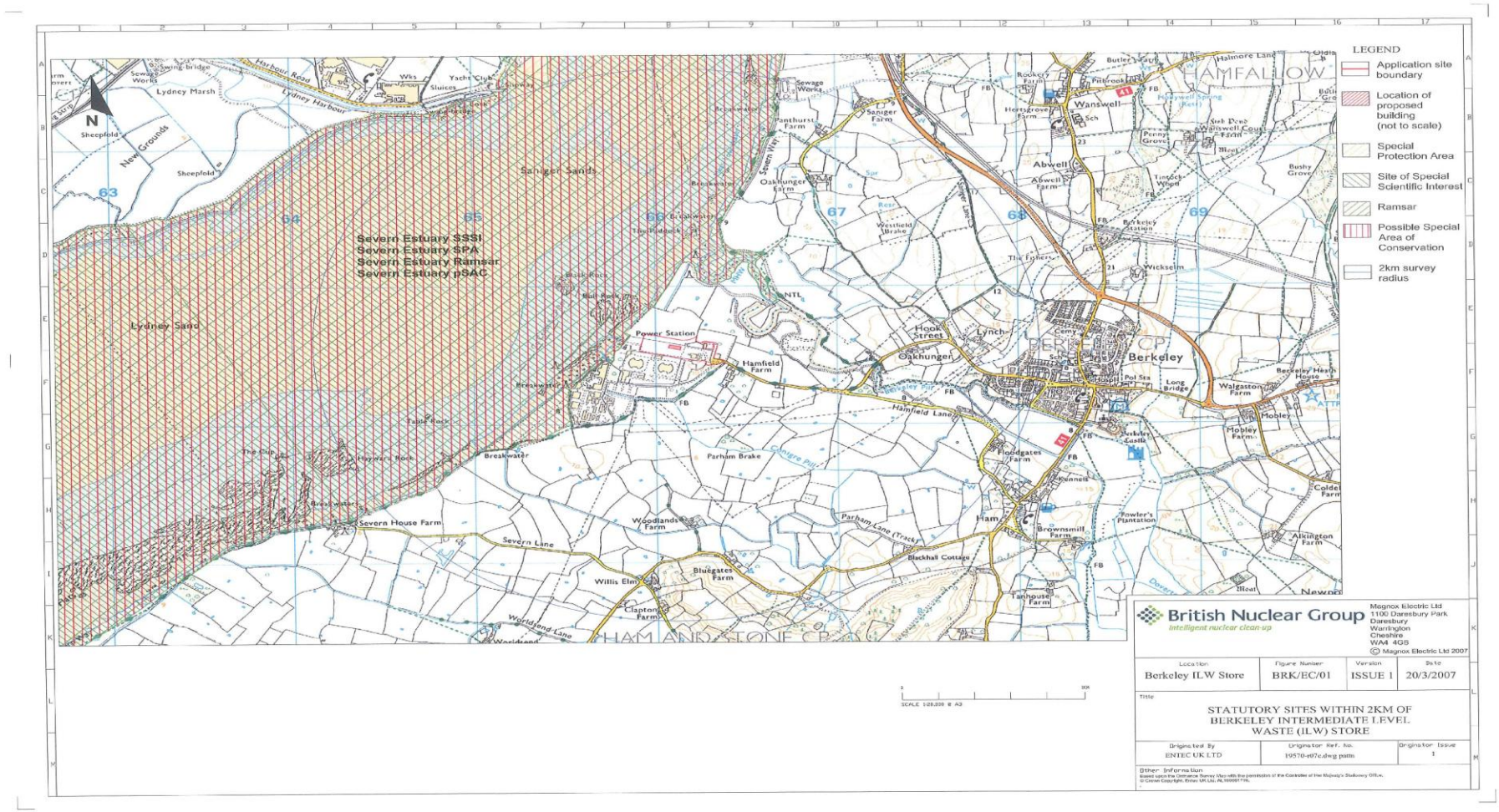
The following table illustrates further parameters that are significant for the site.

Table 3: Additional Data for baseline Years 2012/13 for Berkeley Site

SEA Objective	Additional Data	Changes in Additional Parameters	References
Surface Water Resources and Quality	• In 2012 the site consumed 4644 m^3 of mains water, which reduced to 4905 m^3 in 2013. The slight increase in usage is attributed to the construction of the Interim Storage Facility for ILW waste.	• Water consumption at the site is likely to continue for the duration of the C&MP period at a similar level.	*1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions*
Economy, Society and Skills	• The site is located in rural area of the Stroud District of Gloucestershire. • The major settlements within 10km of the site are Berkeley town to the east, Thornbury to the south, and Lydney to the west on the opposite bank of the Severn. There are numerous small villages and settlements in the area in addition to these larger towns.[1] • The population of Stroud District was 113900 during 2013. • Stroud District had a working population of 56700 during 2013.[2] • The dominant working sectors in Stroud District during 2012 were Services (30200, 67.9 %), Public Admin Education and Health (10,500 23.6%) and Manufacturing (10200, 23%).[2] • In December 2010, 106 staff, 30 project staff and contractors were directly employed by the site. • Employment in the Electricity, Gas and Water Supply industry in Stroud District was not listed, but the effect of employment at the site is likely to be low against the total working population of this district.	• 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.	*1. Ordnance Survey (2011) 1:25,000 Sheet 167, Thornbury, Dursley and Yate* *2. Office for National Statistics (2014) Official Labour Market Statistics, available at http://www.nomisweb.co.uk/* *3. EU (2011) Cohesion Policy 2007 – 13, available at http://ec.europa.eu/regional_policy/atlas2007/index_en.htm*

	• In 2013 (27300, 40.6 %) of the population were employed to NVQ4 level or above. • Stroud District is not subject to Convergence Funding from the EU, or other external assistance.[3]		
Traffic and Transport	• The Annual Average Daily Traffic (AADT) from all traffic movements on the A38 immediately adjacent to the junction with the B4066 (for access to the site) from recent measurements was 7834, of which 418 were Heavy Goods Vehicles (HGV) movements.[1] • The proportion of these total movements that are directly attributable to the site is very low, and will continue to be so even during periods of increased work at the site.	• It is anticipated that general traffic and HGV movements will remain steady or increase during the remainder of the C&MP phase at the site. • Higher numbers of personnel will be on site due to the requirements of MODP, meaning that the daily commuting movements will likely be maintained. • Movement of materials for potential future major construction or other projects e.g. delivery of DCICs to site, construction of the site ILW store 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.	*1. Department for Transport (2014) AADF Home, available at: http://www.dft.gov.uk/matrix/search.aspx*

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



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