



Hinkley Point A 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

Hinkley Point A Site
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Hinkley Point A Site

Hinkley Point A Site (hereafter referred to as the Site) is a twin reactor Magnox station undergoing decommissioning, and is located in the West Somerset District of the county of Somerset, South West England. It is situated on the Hinkley Point headland in Bridgwater Bay, on the southern shore of the Bristol Channel, from which it drew cooling water supplies during its operational phase. EDF's Hinkley Point B power station is situated immediately adjacent to the east. The site covers an area of approximately 20 hectares.¹ 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 1965.¹
- The site ceased electricity generation in 2000 after 35 years of operation.¹
- Defuelling of the reactors was completed by 2004.¹
- The Care and Maintenance Preparations (C&MP) phase of the decommissioning process is scheduled to be completed in 2025 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 2090.²

¹ *Magnox Ltd (2013) Hinkley Point A. Available at <http://www.magnoxsites.co.uk/site/hinkley-point-a/>*

² *Nuclear Decommissioning Authority (NDA) Business Plan, 2012-2015*

Site End State Assumption

The planned end state for Hinkley Point A 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 Environmental Baseline

Table 1: Baseline Data for all SEA Objectives for Hinkley Point A Site

SEA Objective	Environmental Baseline Data	References
<p>Air Quality & Dust</p>	<p><u>Radioactive Discharges</u></p> <ul style="list-style-type: none"> • Aerial discharges of radioactivity have reduced since the cessation of generation. The reactor cores at the site 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. • Nuclear operations including waste retrieval which are being undertaken as part of the decommissioning works result in minor but regular aerial discharges of radioactivity. <p><u>Conventional Discharges</u></p> <ul style="list-style-type: none"> • 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 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 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 	<p>1. DEFRA (2014) Air Quality, http://aqma.defra.gov.uk/aqma/list.php</p>

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 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, and these are fossil fuel powered. This auxiliary equipment consists of a single diesel generator (with a second having recently been removed from service). 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 the site, which have associated carbon emissions. No vehicles are used for District Survey purposes, as this is carried out by Hinkley Point B on behalf of both sites. Indirect carbon emissions originate from the use of hire vehicles by site personnel when travelling on company business in addition.
- Electric vehicles are also used on site by health physics and the waste team, which minimises the carbon emissions associated with site vehicle usage.
- 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 ongoing issue for Hinkley Point A 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 low-lying land at sea level on the coast of the Bristol Channel which is highly tidal at that location and historic instances of storm surge flooding (e.g. 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 2081, 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 11m above Ordnance Datum (mAOD), and is protected from flooding and erosion by a concrete sea wall founded on the shoreline rock platform (crest height 8.5m) and a secondary gabion wall (crest 12m) behind the main sea wall.

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

	<ul style="list-style-type: none"> 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 requirement of the C&M Safety Case. Furthermore, the rise in sea level during the C&M period will be gradual, allowing the advance planning of any necessary mitigation measures. 	
<p>Biodiversity, Flora and Fauna</p>	<ul style="list-style-type: none"> The site is situated in a predominantly rural setting, and has 5 statutorily designated areas in close proximity. These designated areas are: <ul style="list-style-type: none"> Severn Estuary Special Protection Area (SPA) Severn Estuary Ramsar Severn Estuary Special Area of Conservation (SAC) Bridgwater Bay Site of Special Scientific Interest (SSSI) Bridgwater Bay National Nature Reserve.¹ In addition to the statutory sites listed above, the Hinkley Point Western Site Boundary Local Wildlife Site is situated immediately adjacent to the site, and the Lilstock SSSI is situated approx. 3 km from the site. Due to these designations the coastline adjacent to the site is also classified as the Severn Estuary European Marine Site.^{2c} The site Biodiversity Action Plan considers how the site manages its impacts on local ecosystems. This document is reviewed and updated on a regular basis. 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.³ 	<p>1. <i>Hinkley Point A Site Environmental Impact Assessment Baseline Report</i> 2. <i>Natural England (2011) England’s European Marine Sites, available at http://www.naturalengland.org.uk/ourwork/marine/protectandmanage/mpa/europeansites.aspx</i> 3. <i>Environment Agency (2002) Impact Assessment of Ionising Radiation on Wildlife</i></p>
<p>Landscape and Visual</p>	<ul style="list-style-type: none"> The site is located on the north Somerset Coast, facing Bridgwater Bay in the Bristol Channel.¹ The main features in the immediately surrounding area are marshlands to the south and east, a double ridge and valley structure running along the coast to a shallow sea cliff, and the extensive mudflats and rocky outcrops of Bridgwater Bay 	<p>1. <i>Ordnance Survey (2011) 1:25,000 Sheet 140, Quantock Hills and Bridgwater</i> 2. <i>Hinkley Point A</i></p>

^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.

	<ul style="list-style-type: none"> • The landscape to the south and west is more hilly, with the Quantock Hills Area of Outstanding Natural Beauty being situated within 7 km of the site.² • The reactor buildings and other site structures are visible from the surrounding countryside and coastline in close proximity, and are visible from certain locations / perspectives at medium-long distances.² • This visual impact of the site is combined with that of EDF’s Hinkley Point ‘B’ Site. As such, the Hinkley Point Power Stations are together a prominent feature in the local landscape. • The proposed Hinkley Point ‘C’ site, which if built will be situated to the immediate west of ‘A’ site, will also significantly contribute to the total visual impact of the Hinkley Point Power Stations. 	<p><i>Site Environmental Impact Assessment Baseline Report.</i></p>
<p>Archaeology & Cultural Heritage</p>	<ul style="list-style-type: none"> • There is 1 Scheduled Ancient Monument, the Pixies Mound Bronze Age tumulus, to the south of the site substation. • There are 2 Grade I and 3 Grade II* Listed Buildings within 7 km of the site. • There is 1 entry in the draft Register of Landscapes, Parks and Gardens of Special Historic Interest, Fairfield Garden, as listed by Natural England, within 5 km of the site. • Nearby sites of archaeological interest include evidence of nearby Roman settlement. 	<p><i>1. Hinkley Point A Site Environmental Impact Assessment Baseline Report.</i></p>
<p>Groundwater, Geology and Soils</p>	<ul style="list-style-type: none"> • The site is immediately underlain by made ground consisting of clay and crushed weathered bedrock excavated from the southern part of the site. The superficial deposits in the vicinity of Hinkley Point A Site consists of alluvium and stiff clays. • The bedrock at the site is the Jurassic Blue Lias, which consists of interbedded shales, mudstones and limestones, underlain by the Triassic Penarth Group; limestones and mudstones with occasional sandstone bands, underlain by the Triassic Mercia Mudstone basement rock. • A major fault runs south west – north east across the site which dips approximately 75° to the north-west, and has caused a downthrow of the westernmost strata of between 10 and 75m. A weathered zone is associated with this fault. • The superficial deposits at the site are considered a Minor aquifer. The bedrock at the site is also considered a Minor aquifer.¹ • There are 5 licenced abstractions within 5 km of the site which are used for general agricultural and domestic purposes. • The soils in the area surrounding the site are classified as poorly-drained (seasonally wet) loams and clays.² 	<p><i>1. Hinkley Point A Site Environmental Impact Assessment Baseline Report.</i> <i>2. Cranfield University (2011) National Soil Resources Institute – Soilscales, http://www.landis.org.uk/soilscales/</i></p>

Land Quality

- The site has limited amounts of radioactive and chemical land contamination.
- The radioactive contamination is limited in extent, and is primarily associated with soil surrounding the Active Effluent Valve Pit (AEVP12). Tritium has been detected in groundwater originating from within the RCA, in addition.
- The non-radioactive contamination consists of concentrations of hydrocarbon contamination associated with the essential diesel generator building, the turbine hall, and the blower houses (gas circulators) for both reactors. Light Non-Aqueous Phase Liquids has been found in boreholes in the vicinity of the essential diesel building and extraction has been attempted with limited success, primarily due to the complex hydrogeology at the site.
- The land and groundwater that is chemically contaminated is associated with the essential diesel generator building, the turbine hall and the blower houses in both Reactor buildings. PCBs have been identified in hydrocarbon-contaminated surface soils in a number of boreholes in the vicinity of the transformer bays, in addition.
- Poly-Chlorinated Biphenyls (PCBs) have been detected in conjunction with the oil contamination, in addition.
- The groundwater monitoring programme continues to closely monitor the distribution of existing contamination to ensure it is not migrating outside of the site boundary.
- In 2012 a standalone incident occurred in which a quantity of acid was lost to ground. Assessment of this event concluded that the acid did not pose a direct threat to the water table nor did it pose a significant threat of mobilising or producing a preferential pathway for other contaminants. A borehole was drilled to provide assurance of pH levels in groundwater down-gradient of the acid leak site.
- 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.

<p>Surface Water Resources and Quality</p>	<ul style="list-style-type: none"> • The nearest water body to the site is the Bristol Channel. The Stogursey Brook flows into the sea approximately 0.5km to the east of the site, and the River Parrett flows into the sea approximately 7km to the east.¹ • The ecological status of the Stogursey Brook is considered poor under the Water Framework Directive.² • The nearest bathing water sampling point is situated at Burnham-on-Sea, approximately 8km distant. This sampling point was listed as being the minimum pass standard.³ • The area of the site containing the main structures is in the EA fluvial/tidal Flood Zone 1 (so would be affected by floods less frequent than 1 in 1000 years).⁴ • Aqueous effluent discharges (and cooling water discharges during the operational phase) have always been made to the Bristol Channel. • 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 as the previous system. 	<p>1. Ordnance Survey (2011) 1:25,000 Sheet 140, Quantock Hills and Bridgwater 2. Environment Agency (2011) Water Framework Directive – River Basin Management Plans – Rivers 3. Environment Agency (2011) Bathing Water Quality, http://www.environment-agency.gov.uk/homeandleisure/37793.aspx 4. Hinkley Point A Site Environmental Impact Assessment Baseline Report.</p>
<p>Waste</p>	<ul style="list-style-type: none"> • 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. • 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. • Intermediate Level Waste (ILW) is generated from both operational and decommissioning activities. Having accumulated at several locations at the site, the majority of ILW 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 vaults in the concrete bioshield which will be retrieved during FSC.¹ 	<p>1. Magnox Ltd (2013) Hinkley Point A IWS 2. DECC (2011) Implementing Geological Disposal Annual Report April 2010 – March 2011</p>

	<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 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 	
<p>Traffic and Transport</p>	<ul style="list-style-type: none"> The site access road connects to the A39 trunk road via several unnamed rural roads. The A39 links to the national motorway network at Jct. 23 or 24 (via the A38) M5. The nearest railhead to the site is located on the Bristol to Taunton Main Line that runs through Bridgwater. This fully operational line runs regular passenger and freight services. The nearest passenger rail station is located at Bridgwater. 	<p>1. Ordnance Survey (2011) 1:25,000 Sheet 140, Quantock Hills and Bridgwater</p>
<p>Land Use and Material Assets</p>	<ul style="list-style-type: none"> The site occupies an area of 19.4 hectares (on an overall NDA estate of 26 hectares).¹ The site consists of two reactor buildings, turbine hall (deplanted and the basements being infilled with spoil produced by the ground preparation works for the proposed adjacent Hinkley Point ‘C’ site), an ILW vault complex, various ancillary buildings, access roads, grassy areas and areas of hardstanding. The surrounding area is rural in nature and is used for agricultural and recreational purposes. Notable uses in proximity to Hinkley Point A Site include a network of footpaths in the area, including one that passes along the coast immediately adjacent to the station, and also to the immediate east and south of the site footprint. The site incorporates a significant quantity of material that is potentially eligible for direct reuse or recycling: This includes a substantial quantity of recyclable metal in the turbine hall superstructure, the boilers, the gas ducts, the SPVs, and as rebar incorporated into large concrete structures such as the bioshield ². A proportion of this recyclable metal will or has been made available for recycling during the C&MP phase, such as from the future dismantling of the turbine hall structure, once the basement has been fully infilled, and other general building dismantling. 	<p>1. Magnox Ltd (2011) Hinkley Point A – Facts and Figures. Available at http://www.magnoxsites.co.uk/our-sites/hinkley-point-a/facts-and-figures 2. Magnox Ltd. (2011) Hinkley Point A Site IWS</p>

	<ul style="list-style-type: none"> • The boilers, the primary circuit, the bioshield and the SPVs will be dismantled at FSC, so the majority 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 out of scope, and as such may be eligible for recycling and reuse within or outside 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 	
<p>Noise and Vibration</p>	<ul style="list-style-type: none"> • Noise and vibration originate from a number of sources at the site. • The Baseline Noise Survey Data (L_{Aeq} 1 hour, dB(A)), 2001 / 07) is as follows: <ul style="list-style-type: none"> ○ Visitor’s Centre – 50.0 ○ Public footpath (including coastal footpath) – 50.4 ○ Doggetts Farm – 43.4 ○ Properties at Wick (e.g. Wick Farm) – 52.2 ○ Properties at Stolford (e.g. West End Cottage) – 52.7.¹ • 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. • The site has recently run a noise monitoring programme, which has provided valuable baseline noise data to allow comparison of noise monitoring data during noisy activities and to ensure that threshold levels are not exceeded. 	<p><i>1. Hinkley Point A Site Environmental Impact Assessment Baseline Report.</i></p>

Table 2: Environmental Discharge Data for Baseline Years 2012 and 2013 for Hinkley Point A Site

In addition to the baseline information, which describes the permanent, semi-permanent and inherent features and impacts of Hinkley Point A Site and its surrounding area, the following table outlines discharge data for the site for years 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
<p>Air Quality & Dust</p>	<ul style="list-style-type: none"> • Total Alpha discharged to air was below the reporting threshold in 2012 and 1.57E-08 TBq in 2013. • Total Beta and Gamma (excluding Tritium) to air in 2012 was below the reporting threshold and 1.96E-07 TBq in 2013. • Total Tritium to air was below the reporting threshold in 2012 and 2.97E-02 in 2013.¹ <p>In 2012 the <i>total dose</i> from all pathways and sources of radiation was 0.011 mSv, or approximately 1 per cent of the dose limit, and down from 0.014 mSv in 2011. The lower value in 2012 was due to a decrease from external exposure over intertidal areas. Direct radiation from the site was the dominant contributor to the dose in 2012. The dose to consumers of locally grown food was 0.007 mSv, and the increase in dose (from 0.005 mSv in 2011) was due to higher</p>	<ul style="list-style-type: none"> • 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 remain steady or continue to decrease. • However, certain decommissioning activities such as the as the retrieval, treatment and passivation of wastes and draining of the ponds 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, bioshield concrete and core graphite may result in very minor discharges of tritium. 	<ol style="list-style-type: none"> 1. <i>Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions</i> 2. <i>CEFAS (Centre for Environment, Fisheries and Aquaculture Science) (2012) Radioactivity in Food and the Environment 18</i>

^d Data from 2012 and 2013 are presented to provide an indication of variances.

	<p>carbon-14 concentrations in milk in 2012. The dose to local fishermen, who consume a large amount of seafood and are exposed to external radiation over intertidal areas, was 0.013 mSv in 2012, which was approximately 1 per cent of the dose limit for members of the public of 1 mSv. This estimate also includes the effects of discharges of tritium and carbon-14 from Cardiff. The decrease in dose from 0.020 mSv (in 2011) was due to the reduced gamma dose rates at Stolford.²</p>	<ul style="list-style-type: none"> • 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. 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 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 2012, 8840 MWh of energy was used at the site. In 2013 the consumption decreased to 8509 MWh. • Indirect CO₂ and other greenhouse gas emissions generated (including energy consumption and site diesel usage) was 5.3E-03 megatonnes in 2012 and increasing slightly to 5.0E-03 megatonnes in 2013.¹ 	<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 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. 	<p><i>1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions</i></p>

		<ul style="list-style-type: none"> • 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 in absolute terms and relative to the present are unknown. 	
<p>Surface Water Resources and Quality</p>	<ul style="list-style-type: none"> • Total Alpha liquid discharges were 1.50E-03 TBq in 2012 and 3.50E-03TBq in 2013. • Total Beta Gamma (excluding Tritium) liquid discharges were 2.7E-01 TBq in 2012 and 3.80E-01 TBq in 2013. • Total Tritium liquid discharges were below the reporting threshold in 2012 and 1.67E-01 in 2013.¹ <p>Liquid discharges have increased during 2013 due to the draining of reactor ponds. It is expected that planned works in 2014 (draining of remaining pond and settling tanks) will see this continue into the next year. The site utilises Best Available Technique (BAT) to ensure that discharges are minimised so far as reasonably practicable.¹</p> <p>Analyses of seafood and marine indicator materials and measurements of external radiation over intertidal areas were conducted. The concentrations observed in seafood and other materials from the Bristol Channel were generally similar to those in recent years. Concentrations of tritium in shellfish in 2011 were similar in comparison to those in 2011.</p> <p>The concentrations of transuranic nuclides in seafood was of negligible radiological significance. The dose rates at Stolford decreased in comparison to those in 2011. Overall, gamma</p>	<ul style="list-style-type: none"> • 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. • Certain decommissioning activities such as the as the retrieval, treatment and passivation of wastes, and decontamination and draining of the ponds 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 zero³. • 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. 	<p>1. <i>Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions</i> 2. <i>CEFAS (Centre for Environment, Fisheries and Aquaculture Science) (2012) Radioactivity in Food and the Environment 18</i></p>

	<p>radiation dose rates over intertidal sediment were generally similar to measurements in recent years.²</p>		
<p>Waste</p>	<ul style="list-style-type: none"> • The following waste metrics are for 2012 and 13: • In 2012 the site produced 525.3m³ of LLW from decommissioning activities.¹ • Of this total 11.7 m³ metal was recycled, 41.25 m³ was treated, and 10m³ of LLW was disposed to LLWR.¹ • 462.38 m³ of the LLW was diverted away from the LLWR due to a change in the EPR regulations which has allowed a volume of LLW asbestos to be re-categorised as VLLW and consigned to hazardous waste landfill.¹ • In 2013 the site produced 148 m³ of LLW from decommissioning activities.¹ • Of this total 8 m³ metal was recycled, 130 m³ was treated, and 10m³ of LLW was disposed to LLWR.¹ • In 2012 the site produced 110.12 tonnes of inert waste from decommissioning activities. 100% of this total was recycled.¹ • 226.54 tonnes of non-hazardous waste was produced from decommissioning activities. 70% of this total was 	<ul style="list-style-type: none"> • As decommissioning progresses through the C&MP phase the trends for waste generation will likely remain at current levels or increase. When the site enters C&M in 2015 these levels will fall significantly. 	<p><i>1. Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions</i></p>

	<p>recycled.¹</p> <ul style="list-style-type: none"> In 2013 the site produced 2825 tonnes of inert waste from decommissioning activities. 93% of this total was recycled.¹ 368 tonnes of non-hazardous waste was produced from decommissioning activities. 66% of this total was recycled.¹ 		
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The following table illustrates further parameters that are significant for the site.

Table 3: Additional Data for baseline Years 2012 and 2013 and predicted changes for Hinkley Point A Site

SEA Objective	Additional Data	Changes in Additional Parameters	References
Surface Water Resources & Quality	<ul style="list-style-type: none"> In 2012 the site consumed 8387 m³ of mains water increasing to 8509 m³ in 2013. 	<ul style="list-style-type: none"> Water consumption at the site is likely to continue for the duration of the C&MP period at a similar level. 	<p>1. <i>Magnox 2012 and 2013 Nuclear Industry Sector Plan (NISP) Submissions</i></p>
Economy, Society and Skills	<ul style="list-style-type: none"> The site is located in rural area of West Somerset District, Somerset. The major settlements within 10km of the site are Shurton and Stogursey to the south, Cannington and Bridgwater to the southeast and Burnham-on-Sea to the northeast, as well as a number of small villages and other settlements in the area.¹ The population of West Somerset was 34300 during 2013.² West Somerset had a working population of 12800 during 2013.² 	<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. The proportion of employment in the Electricity, Gas and Water Supply sector in West Somerset will likely be altered to a large degree by the proposed Hinkley Point C construction project, given that it is projected that several thousand workers will be required for the construction phase, and on the order of 1000 employees once the station is operational. 	<p>1. <i>Ordnance Survey (2011) 1:25,000 Sheet 140, Quantock Hills and Bridgwater</i> 2. <i>Office for National Statistics (2014) Official Labour Market Statistics, available at http://www.nomisweb.co.uk/</i> 3. <i>EU (2014) Cohesion Policy 2007 – 13, available at http://ec.europa.eu/regional_policy/atlas2007/index_en.htm</i></p>

	<ul style="list-style-type: none"> The dominant working sectors in West Somerset during 2013 was Services (9000, 80.9 %) and Public Admin, Education and Health (2800, 24.9%). Employment in the Electricity, Gas and Water Supply industry in West Somerset was not listed, but employment at the site may have a small but measureable effect against the total working population of this district given the relatively small overall workforce of the District.² West Somerset is not subject to Convergence Funding from the EU, or other external assistance.³ 		
<p>Traffic and Transport</p>	<ul style="list-style-type: none"> The AADT from all traffic movements on the A39 near Cannington from recent measurements was 6703, of which 411 were HGV movements. This was the most local count point that was available.¹ The proportion of these total movements that are directly attributable to the site is very low, and in general will continue to be so even with the exception of temporary peaks in traffic movements during certain decommissioning projects. 	<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 the site. The number and type of traffic movements in the area will likely be affected to a significant degree by the proposed Hinkley Point C construction project. The exact extent of the projected traffic movements for this project is unknown, but it will be mitigated by measures such as the use of deliveries of large components to the site by ship. 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. 	<p>1. Department for Transport (2014) AADF Home, available at: http://www.dft.gov.uk/matrix/search.aspx</p>

Figure 1: Statutorily Designated Areas in the Vicinity of Hinkley Point A Site

