

Strategic Environmental Assessment

Site Specific Baseline Capenhurst

June 2010

An Environmental and Sustainability Report will be published as part of the Strategic Environmental Assessment (SEA) of the Revised NDA Strategy. It has been produced in compliance with the SEA Directive (2001/42/EC) and transposing regulations (S.I.1633, 2004).

The following pages contain specific baseline information, and maps, for the Capenhurst site. This information is used in the preparation of the Environmental and Sustainability Report. A short introduction is followed by a table containing the current baseline information, organised by sustainability headings. The final section includes information about future developments and environmental issues.

The NDA is committed to openly sharing information and making it accessible to all. In making this non-confidential environmental and sustainability information available we believe that it will provide a useful ongoing resource to the general public.

3. Site Specific Baseline for Sellafield Ltd Capenhurst

Capenhurst

The Capenhurst Site is located in South Wirral and covers an area of approximately 70 hectares. There are two nuclear site licensees on the site. The NDA site is managed by Sellafield Ltd and the other is owned by Urenco UK Ltd (UUK). Some of the data below is for the combined site. Where this is the case it is described in the text.

The gaseous diffusion plant was built at Capenhurst in the 1950's and began commercial enrichment operations in 1961 and continued for some 20 years, ceasing in 1982. By 1982 alternative centrifuge enrichment technology had rendered the diffusion process uneconomic and the plant was finally shut down and decommissioning activities commenced. Subsequent development on site included the provision of support facilities for decommissioning (such as metals decontamination, metal melting and waste packaging facilities) and further facilities in support of UF6 cylinder maintenance. Much of that infrastructure has now been removed. Enrichment operations continue although only on the part of site owned and operated by Urenco UK Ltd.

In 1995 the NDA site was confirmed as the UK's long term uranic storage facility. The diffusion plant building was refurbished and a long term maintenance plan developed. The NDA's current strategy is to store the uranic material until 2120 at which point storage operations will cease and the site cleared and closed.

Site End State Assumption

The Stakeholders' preferred end use is for continuing use as a nuclear licensed site under the control of another licensee.

Current Environmental Baseline

Table 3: Baseline Data across all topics for Capenhurst

SEA Objective	Key Environmental Baseline	Source
Air Quality	<p>Non-radioactive emissions such as NO₂ and PM₁₀ are generated through vehicle and plant machinery activity, and are not considered to have a significant detrimental effect on air quality.</p> <p>The Radioactivity in Food and the Environment (RIFE) report highlighted that the combined Capenhurst site discharged 1.77 E-8 TBq of activity in 2008. The discharges for the combined Sellafield Ltd and UUK Capenhurst sites were assessed to result in doses to the critical group (a group or representative individual who receive the largest dose from artificially produced radionuclides due to their habits, diet and where they spend their time) of less than 0.005 mSv/y or less than 0.5% of the public dose of 1 mSv/y.</p>	<p>Environment Agency et al. (2009) <i>Radioactivity in Food and the Environment</i></p>

Global Climate Change and Energy	<p>No data is currently available on the emission of CO₂ from the site. In 2008 Sellafeld Ltd Capenhurst consumed some 10.4 TJ of energy. The site is located approximately 40 m Above Ordnance Datum (AOD) and is situated sufficiently away from water bodies that climate change induced risks of flooding and landscape change are not considered to be relevant.</p>	<p>NDA (2008) <i>NSP Returns</i>; Nexia Solution (2008) <i>Position Paper on Climate and Landscape Change Effects at NDA Sites</i></p>
Biodiversity, Flora and Fauna	<p>The site is located approximately 5 km from the bank of the River Mersey which is designated as a Site of Special Scientific Interest (SSSI), Ramsar Site and Special Area of Conservation (SAC). The River Mersey is notified for its large areas of intertidal sand and mudflats, which support internationally important populations of Turnstone, Redshank and nationally important populations of Cormorant.</p> <p>In a survey undertaken in 2004, a number of Great Crested Newts were found close to the site, although none were found on the site. Bats have been previously found in a building requiring demolition. All the necessary licences were obtained to allow the demolition to continue.</p> <p>A generic assessment of the impacts of the radioactive discharges on wildlife from the UK's nuclear facilities concluded that the chronic dose rate guideline was not exceeded for any of the assessed marine or terrestrial organisms. Furthermore, the estimated to wildlife were below the level at which effects could be observed.</p> <p>The supporting figure highlights the context of the nuclear licensed site and its immediate surroundings. The area shown in the figure does not attempt to identify all potential designated sites that may be affected by activities associated with the UK Nuclear Industry LLW Strategy. Rather, it attempts to strike a balance between highlighting those sites that are in the vicinity of the nuclear licensed site between different topic themes. Hence, more expansive coverage would reduce the visibility of other designated sites (such as Scheduled Ancient Monuments which, by their nature, have significantly smaller coverage than ecological based designated areas).</p>	<p>NDA (2005) <i>Capenhurst EAPINS Project Questionnaire</i>; Magic website www.magic.gov.uk; and Environment Agency (2020) <i>Impact Assessment of Ionising Radiation on Wildlife</i></p>
Landscape and Visual	<p>Capenhurst is located approximately 1km west of Ellesmere Port on the Wirral. To the south and west of the site is predominantly mixed agricultural land, with areas of improved pasture, arable farming and market gardens interspersed with residential development.</p> <p>There is no significant impact on views from surrounding areas.</p>	<p>www.earth.google.co.uk</p>
Cultural Heritage	<p>There are no archaeological or historical features identified within 2km of the site.</p>	<p>www.magic.gov.uk</p>
Groundwater, Geology and Soils	<p>The general geological make up of the site is drift covered hard rock (Sherwood Sandstone).</p> <p>In 2007, the Capenhurst integrated Waste Strategy estimated that some 6,630 m³ of non-radioactive ground contaminated with hazardous and non hazardous materials was present on the site.</p> <p>Post uranium deconversion stage of decommissioning, there is anticipated to be 978 m³ of soil contaminated with radioactive material which will require treatment as Low Level Waste (LLW).</p> <p>Groundwater monitoring across a network of boreholes continues on a quarterly basis in close collaboration with Urenco (UK) Ltd. Data retrieved from this programme continues to indicate no gross levels of contamination to be present in groundwater. However, work completed indicates that trichloroethene (TCE) contamination in groundwater in the eastern portion of the site may constitute an ongoing "significant pollutant linkage" in respect of the controlled water body. Work has considered potential TCE remediation options and assessment work continues.</p>	<p>NDA (2005) <i>Capenhurst EAPINS Project Questionnaire</i>; NDA (2007) <i>Capenhurst 2007/08 IWS</i>; Nexia Solutions (2008) <i>Position Paper on Climate and Landscape Change Effects at NDA Sites</i></p>

<p>Surface Water Resources and Quality</p>	<p>During 2008 the total alpha radioactivity discharged to controlled waters was 1.59×10^{-4} TBq. This also included discharges from the UUK site operations that are reported under the Sellafield Ltd RSA93 authorisation.</p> <p>The RIFE report highlighted that Capenhurst discharged 1.43×10^{-4} TBq of uranium (19% of annual discharge limits), 1.63×10^{-5} TBq of non-uranic alpha (7.4% of annual discharge limits) and 1.73×10^{-5} TBq of technetium-99 (1.7% of annual discharge limits) to liquids. These discharges were measured from Rivacre Brook.</p> <p>The exposure the critical group (a group or representative individual who receive the largest dose from artificially produced radionuclides due to their habits, diet and where they spend their time) of approximately 0.010 mSv/y or 1% of the public dose limit.</p> <p>The nearest water course monitored by the Environment Agency is Rivacre Brook between Capenhurst and the A41. Between 2004 and 2006 the water quality was compliant with set targets.</p> <p>During 2007, 3,260 m³ of water were consumed at the combined site.</p> <p>The potential ecological status of the Dee estuary is considered to be moderate as is the River Mersey's estuary. The chemical status is considered to be good in Dee estuary, although the River Mersey estuary and Liverpool Bay is failing to achieve good chemical status as classified by the Water Framework Directive.</p>	<p>NDA (2005) <i>Capenhurst EAPINS Project Questionnaire</i>;</p> <p>Environment Agency et al. (2009) <i>Radioactivity in Food and the Environment</i> ;</p> <p>Environment Agency website (www.environment-agency.gov.uk);</p> <p>NDA (2008) <i>NSP Returns</i>;</p> <p>Environment Agency (2009) <i>Water for life and livelihoods River Basin Management Plan Dee River Basin District and North West River Basin District 2009 – 2015</i>.</p>
<p>Waste</p>	<p>During 2007, 3,498 tonnes of non-hazardous waste were produced on site as a result of routine operations & decommissioning activities. Some 95% of this was recycled or reused. Approximately 665 tonnes of hazardous waste were produced with just 0.01% being reused or recycled.</p> <p>It is currently estimated that some 48,600 m³ (packaged volume) of Low Level Waste (LLW) will be generated during decommissioning of the Sellafield Ltd site.</p> <p>There is some 10,700 m³ (packaged volume) of LLW held on the Sellafield Ltd site.</p>	<p>Environment Agency (2008) <i>NSP Returns</i>;</p> <p>NDA (2007) <i>Capenhurst 2007/08 IWS</i></p>
<p>Economy, Society and Skills</p>	<p>The site is situated in the village of Capenhurst which falls under the jurisdiction of Chester City Council. In 2001 the district of Chester had a total population of 118,200 and a total working population of 86,789.</p> <p>Unemployment within Chester was relatively low at just 2.4% compared with a regional average of 3.6%.</p> <p>In 2005, Sellafield Ltd Capenhurst contributed some £6.2 million to the local economy and directly employed 302 people. However, this has significantly decreased to £1.7 million, with approximately 120 people employed.</p> <p>The number of 16-74 year olds with no qualifications is 24% which is significantly lower than the regional average of 32%.</p> <p>The number of 16-74 year olds with qualifications at level 4 or above is 27%, compared with a regional average of just 17%.</p>	<p>National Statistics www.neighbourhood.statistics.co.uk;</p> <p>NDA (2005) <i>EAPINS Project Questionnaire</i></p>
<p>Traffic and</p>	<p>Access to the site is via a series of minor roads which connect to the A540 to the west, the A550 to</p>	<p>www.earth.google</p>

Transport	<p>the north, and the A41 to the east. These roads all connect to the M56 motorway.</p> <p>Immediately adjacent to the site is the Capenhurst Railway station which is on the Liverpool to Chester line. However, there is no goods link to the site.</p> <p>There are no bus services in the vicinity of Capenhurst.</p>	<p>e.co.uk and www.firstgroup.com/ukbus/northwest/chesterwirral/home/</p>
Land Use and Material Assets	<p>The Sellafield Ltd Capenhurst site covers an area of approximately 40 hectares. Much of the surrounding land is used for agricultural purposes and is classified as grade 3 agricultural land.</p>	<p>MAGIC website (www.magic.gov.uk); NDA (2008) <i>NSP Returns</i></p>
Noise and Vibration	<p>There is limited data relating to noise and vibration levels near the site. However, there are one or two enquires per year relating to noise levels from the combined site.</p>	<p>NDA (2005) <i>EAPINS Project Questionnaire</i></p>
Health and Safety	<p>The RIFE report highlights that the critical group (a group or representative individual who receive the largest dose from artificially produced radionuclides due to their habits, diet and where they spend their time) dose for discharges to the atmosphere were assessed as less than 0.005 mSv/y, or less than 0.5% of the public dose limit and less than 0.25% of the annual average UK public exposure to background radiation. The critical group dose for liquid discharges to the aquatic environment was assessed as 0.010 mSv/y, or 1% of the public dose limit.</p> <p>Mean employee dose in 2008 was 0.73 mSv/y, with mean contractor dose of 0.62 mSv/y. Maximum individual worker dose during 2008 was 2.16 mSv/y.</p> <p>There was only one minor recorded RIDDOR incident in 2008/09. Capenhurst had an Occupational Safety and Health Administration (OSHA) Total Recordable Incident Rate (TRIR) of 2.26.</p>	<p>Environment Agency et al. (2009) <i>Radioactivity in Food and the Environment</i>;</p> <p>NDA (2008) <i>Annual HSSE Report</i></p>

Future Developments

Discharges from the Sellafield Ltd Capenhurst site are likely to fluctuate during decommissioning activities, and may increase during the demolition of storage facilities on the site. However, the exposure of people and wildlife to radioactivity as a result of these discharges are expected to remain low.

The decrease in employment at Sellafield Ltd Capenhurst, and the reduction to the economic contribution from expenditure and salaries may affect the local area. Possible expansion by Urenco UK Ltd and the proximity to Chester may provide alternative employment opportunities.

LLW will be generated during decommissioning works, particularly demolition of the planned uranium deconversion facility.

Environmental Issues

Soil and groundwater quality at Capenhurst is an area of further work due mainly to non-radioactive contamination, as described above.