NIS briefing note

November 2009

Project Pegasus – AWE Aldermaston's proposed Enriched Uranium Facility

A briefing from Nuclear Information Service

1 Background

On 27th November the Ministry of Defence submitted a planning application to West Berkshire Council for construction of a new facility for the storage and handling of enriched uranium at the Atomic Weapons Establishment (AWE) Aldermaston (planning reference 09/02396/COMIND)[1].

The new facility, known as Project Pegasus by AWE's planners, is the latest development in AWE's site development strategy for modernising and rebuilding the facilities needed to develop and manufacture Britain's nuclear weapons. Work began on the project in 2003 and, following a series of project option and design studies, has now reached the planning application stage. The new facility will replace AWE's existing enriched uranium handling capacity in Aldermaston's ageing A45 building and a number of smaller buildings.

West Berkshire Council are expected to allow three months for public consultation on the planning application, which is likely to be determined at a meeting of the Council's Eastern Area Planning Committee in February / March 2010. Despite requests for pre-application consultation from a number of local MPs[2] AWE has made no effort to seek opinions on the proposed development from local residents and the wider public before submitting the planning application.

Key information about the proposed new facility, its impacts, and the risks it poses will be withheld from the public because the Secretary of State for Communities and Local Government has granted the Ministry of Defence exemption from preparing an environmental impact assessment for the development. However, the US government is currently developing a similar uranium processing facility at its Y-12 National Security Complex at Oak Ridge, Tennessee, in parallel with the development at AWE, and the US authorities have allowed far more information to be released about the impacts of the Y-12 development than the Ministry of Defence has disclosed for the enriched uranium facility at

1 West Berkshire Planning Applications web portal: planning application 09/02396/COMIND for "replacement facility for the storage and handling of enriched uranium covering 18,489 square metres gross floor space on a 10, 496 square metre footprint, including office accommodation, storage facilities, material handling areas and ancillary support services. Construction related infrastructure is all proposed including access roads, construction compound, fencing, gates and ancillary facilities". http://bit.ly/4TBLs7

2 MPs Richard Benyon (Newbury), Rob Wilson (Reading East), and Andrew Smith(Oxford East) have all written to the Ministry of Defence asking the Ministry to undertake pre-application consultation with the public on the proposed development.

Aldermaston[3]. Technical elements of this briefing have been prepared using freely available information about the Y-12 development and information released by the Ministry of Defence in request to responses made under the Freedom of Information Act.

2 Why build a new facility?

AWE is responsible for designing and building Britain's arsenal of Trident nuclear warheads. Work at AWE covers the entire life cycle of nuclear warheads; from initial concept, assessment and design, through to manufacture and assembly, in-service support, and decommissioning and disposal.

Enriched uranium is used to manufacture components of Trident warheads and also as fuel for nuclear submarine reactors, and AWE operates facilities which are able to store, cast, machine and recycle enriched uranium. However, the uranium enrichment process itself has never been undertaken at AWE and there are no plans to manufacture enriched uranium in new facilities at AWE[4]. The UK has obtained enriched uranium for military purposes in the past from the Capenhurst enrichment plant formerly operated by British Nuclear Fuels (which stopped production of enriched uranium for military purposes in 1962) and through exchanges of special nuclear material with the US Department of Energy[5]. The Ministry of Defence's total audited stock of highly enriched uranium amounted to 21.86 tonnes in March 2002, and as this is enough to manufacture components for hundreds of nuclear warheads, there are no plans to produce any more of the material.

AWE wishes to retain its enriched uranium handling capability for the foreseeable future in order to be able to guarantee the reliability of existing Trident warheads and produce a successor to the Trident warhead, should this be required. In order to do this AWE intends to build a new uranium handling facility, which it considers would represent the best value for money option.

Currently, uranium processing and storage is undertaken across the AWE Aldermaston site in a number of facilities, some of which were constructed over 40 years ago and are reaching the end of their operational lives. The age and condition of the most important of these facilities, the A45 complex, is a major driving force behind construction of a new enriched uranium facility at Aldermaston. Both the Health and Safety Executive's Nuclear Installations Inspectorate (NII) and the Environment Agency have expressed concerns about operating standards at A45, which was opened in the 1950s and was not built to meet current design requirements for nuclear installations. In May 2008 NII announced its decision on the future of A45 following a Periodic Review of Safety of the facility, stating: “NII confirmed to AWE that an adequate safety case had been demonstrated for the continued operation of the facility up to 31 March 2016, subject to satisfactory progress being made in completing an agreed improvement work programme. AWE accept that future operations will depend upon satisfactory results being demonstrated from the regular examination, inspection, maintenance and testing programme that support the normal operations of the facility. Until a replacement facility becomes available, any

3 Site-Wide Environmental Impact Statement for the Y-12 National Security Complex. US Department of Energy National Nuclear Security Administration. www.y12sweis.com

4 House of Commons Written Answer: AWE Aldermaston. Hansard, 4 November 2008, Column 300W.

5 'Historical Accounting for UK Defence Highly Enriched Uranium'. Ministry of Defence. March 2006. http://bit.ly/5f8ukg

operations beyond 2016 will need to be adequately justified to NII."[6] Because of NII concerns, A45 is currently operating at a reduced level and cannot achieve the full production capacity desired by AWE[7].

AWE has considered a range of options for future enriched uranium operations, including doing nothing, refurbishing existing facilities, building new process areas within existing facilities, undertaking enriched uranium work in other new facilities, and even withdrawing from the role of manufacturing certain uranium products (probably naval nuclear reactor fuel) and instead purchasing them from the US government[8]. Most of these options were discarded because they were uneconomical, or would not meet regulatory requirements on safety and the environment, or would not allow AWE to fulfill its contractual obligations to the Ministry of Defence. A newly built facility, in contrast, is expected to allow improvements to be made to enriched uranium processing, leading to less waste and allowing environmental improvements.

AWE has therefore opted to build a new enriched uranium facility which is intended to enter into service by 2016 to replace A45 and ensure future enriched uranium handling operations are not compromised by safety concerns[9]. The project to design and build the new facility has been christened 'Project Pegasus' following AWE's tradition of naming site development infrastructure projects after star constellations.

Project Pegasus Timetable

Planning application submitted:	November 2009
'Main Gate' project approval:	End of 2010
Construction work commences:	Autumn 2011
In service date:	2016

As well as planning permission, the project will have to pass a number of other regulatory 'hold points'. A number of detailed design and safety documents will be required after planning permission has been granted and must be approved by AWE's regulators prior to commissioning of the facility and its entry into service.

The new enriched uranium facility will take around five years to build with a target date for completion in 2016. The costs of the project are classified, but comparison with other current projects at AWE and uranium facilities at the Y-12 complex in the USA suggests that the price tag for Project Pegasus will be between £300 and £500 million. As an indication of the scale of the project the joint AWE – Ministry of Defence project management team responsible for managing the project consisted of over 50 staff

6 AWE Aldermaston and Burghfield. Quarterly Report for 1 April to 30 June 2008. Health and Safety Executive Nuclear Installations Inspectorate. http://bit.ly/4r6VVP

7 'Enriched Uranium Facility Initial Gate Business Case', paragraph 4. Reference DES/NW/PSO/555/35. Ministry of Defence, 3 April 2007.

8 'Enriched Uranium Project. Summary of Findings of Studies Supporting Best Practicable Environmental Option Selection', section 2.2. Reference DMP/EUP/LL2361888. Atomic Weapons Establishment, September 2006.

9 AWE Aldermaston and Burghfield. Quarterly Report for 1 April to 30 June 2008. Health and Safety Executive Nuclear Installations Inspectorate. http://bit.ly/4r6VVP

members in 2007[10], and this number is likely to increase as design work reaches a peak. Project Pegasus has been designed alongside a new Uranium Processing Facility which will serve a similar function in the USA's nuclear weapons infrastructure at the Y-12 National Security Complex at Oak Ridge. Both projects have benefited from trans-Atlantic exchange of information, and the two project teams have been encouraged to share common design elements, analytical approaches to developing safety bases, design and regulatory standards and other information that may be mutually beneficial[11].

3 The role of the new facility

The enriched uranium facility at Aldermaston will have similar functions to the uranium processing facility at Y-12 in America.[12] The main tasks of the US plant are to manufacture, assemble and dismantle two components of nuclear weapons: (a) the 'secondary', or fusion stage and (b) the radiation case which surrounds the complete warhead.[13] The secondary, with some additional components, is also referred to as the 'canned sub-assembly'. The canned sub-assembly contains highly enriched uranium, lithium deuteride and classified special materials. Both the secondary and radiation case are required in modern thermonuclear weapons to initiate a fusion reaction which adds massively to the destructive power of the nuclear explosion. The uranium processing facility at Y-12 will handle “high enrichment, mixed enrichment and special EU” and it is expected that the Aldermaston facility will do likewise (see box on page 5).[14]

The Pegasus complex will be built close to the main A90 warhead fabrication facility within the high security central core of the AWE Aldermaston site and will consist of:

- A receipt and dispatch store, including a materials unloading and reception area and facilities for packaging materials for on and off-site transport.

- A process building and process annex with the equipment and workstations needed to manufacture enriched uranium products, including casting facilities and furnaces, electroplating baths, and equipment for rolling, heat treating, forming, shearing, and machining uranium metal. The equipment required to carry out each of these processes will be arranged in an integrated series of “workstations” through which each product stream will pass. The process area will also house laboratory facilities for quality testing and non-destructive evaluation of warhead components and uranium materials, including specially shielded cells for X-ray and gamma radiography.

- A service building providing power and utilities for the facility.

10 Enriched Uranium Facility Initial Gate Business Case', paragraph 23. Reference DES/NW/PSO/555/35. Ministry of Defence, 3 April 2007.

11 'Information exchange targets UPF'. BWX Tymes, February 2006. http://bit.ly/7oSSY4

12 'Information exchange targets UPF'. BWX Tymes, February 2006. http://bit.ly/7oSSY4

13 'Draft Site-Wide Environmental Impact Statement for the Y-12 National Security Complex'. Chapter 1, paragraph 1.5.2. Reference DOS/EIS-0387. US Department of Energy National Nuclear Security Administration, October 2009. www.y12sweis.com

14 'Draft Site-Wide Environmental Impact Statement for the Y-12 National Security Complex'. Chapter 3, paragraph 3.2.2.1.2. Reference DOS/EIS-0387. US Department of Energy National Nuclear Security Administration, October 2009. www.y12sweis.com

The new enriched uranium facility at Aldermaston will be built to undertake the following tasks[15]:

- Maintain and service the enriched uranium components of Trident nuclear warheads currently in service.
- Undertake the specialised chemical and metallurgical operations needed to manufacture enriched uranium components for successor warheads to Trident, should they be built.
- Produce highly enriched uranium reactor fuel material for nuclear submarines.
- Undertake research and development work on uranium warhead components.
- Dismantle withdrawn warheads at the end of their service life and recover uranium metal.
- Store AWE's enriched uranium inventory.
- Undertake quality assurance of warhead components by radiography and other means.
- Conduct analysis of the ageing of uranium materials and life prediction of uranium components in order to underwrite the performance and safety of nuclear warheads.
- Recovery of uranium compounds and metal from wastes and oxides.

- Offices and entrance facilities.

- Within these buildings there will also be uranium storage vaults, a waste management and processing area which will include equipment for recovering enriched uranium from wastes, a Work Control Centre to control the movement of fissile materials and moderating materials within the facility, and changing room facilities where staff can change into protective clothing necessary for work in process areas.

To meet containment requirements and provide protection from attack by terrorists or others intent on destroying the facility, each building in the complex (except the entrance facility and offices) will have a concrete box structural form with the structure designed to withstand a range of extreme environmental and hazard loadings, including seismic, temperature and blast impact. The building's ventilation system will be designed to move air from areas of low contamination to areas of high contamination, before filtering and discharge from a stack. The facility will also be designed to reduce the risks from criticality, fire, and movements of nuclear material. Within the materials processing areas inside the facility gloveboxes, inert atmosphere, negative air pressure, and other engineered controls would serve to protect workers and the public from exposure to radiological and hazardous materials.

Civil and structural design work for Project Pegasus has been carried out by Halcrow Group[16] and an economic appraisal of the project has been conducted by Franklin and

15 Enriched Uranium Facility Initial Gate Business Case', paragraph 1. Reference DES/NW/PSO/555/35. Ministry of Defence, 3 April 2007.

16 'Nuclear – clients – AWE'. Halcrow Group website. http://bit.ly/52trpL

Andrews – a specialist construction economist consultancy which is part of the Mott MacDonald Group. Construction contracts for the facility are expected to be awarded after planning permission has been granted.

4 Project Pegasus and a new warhead programme

Significant questions arise about the scale of work that the new enriched uranium facility has been designed to carry out. For the American uranium processing facility at Y-12, three design options have been proposed with different throughputs of 125, 50-80, or 10 secondaries per year.[17] No information is available about equivalent targets for Aldermaston's enriched uranium facility. However an Environmental Options Study undertaken by AWE did look at carrying out enriched uranium processing in other buildings at AWE rather than creating a new facility[18]. Although the building numbers in the study report have been redacted it is likely that two options for warhead work were seriously considered. One alternative was to install enriched uranium processing equipment in a laboratory inside Bay 3 of the A90 building. This bay is used for research work. The second option was to use an existing facility and to alternate between enriched uranium and other work. This probably refers to Bay 1 of A90 where plutonium warhead 'pits' are manufactured. This option would have meant that the same machinery would be used for plutonium and enriched uranium work, although not at the same time. This alternative may have been rejected because of a desire to retain the capability of manufacturing a substantial number of both plutonium pits and secondaries, which would have been reduced if the same facility was used for both processes.

The decision to build a distinct new enriched uranium facility rather than modifying existing capabilities probably derives from AWE's desire to retain the capability to manufacture a new generation of nuclear warheads, should this be required. The AWE site development plan[19] was created at a time when the UK was working with the US on the development of new nuclear weapons. A key indicator of this was the amendment of the US-UK Mutual Defence Agreement (the treaty which sets the terms for co-operation on nuclear weapons between the two countries) in 2004 which gave the UK access for the first time to "use control" technology.[20] This was required to enable Britain to participate in the Reliable Replacement Warhead (RRW) project. The initial requirement for Aldermaston's enriched uranium facility was probably drawn up on the assumption that AWE would be building an RRW-equivalent between 2010 and 2020, and that this would require the production of new secondaries and radiation cases. However the US RRW project has been shelved and, with the election of President Obama, is unlikely to be revived in the short term.[21] AWE are likely to follow the US lead and focus on modifying the current warhead rather than building a new one. As Glen Mara, a senior official at the USA's Los Alamos National

17 'Draft Site-Wide Environmental Impact Statement for the Y-12 National Security Complex'. Chapter 3, paragraph 1.4.6. Reference DOS/EIS-0387. US Department of Energy National Nuclear Security Administration, October 2009. www.y12sweis.com

18 'Enriched Uranium Project. Summary of Findings of Studies Supporting Best Practicable Environmental Option Selection'. Reference DMP/EUP/LL2361888. Atomic Weapons Establishment, September 2006.

19 'Investment at the Atomic Weapons Establishment'. Memorandum to the House of Commons Defence Committee. Ministry of Defence, November 2005. http://bit.ly/8pqL4V

20 'US using British atomic weapons factory for its nuclear programme'. Matthew Taylor and Richard Norton-Taylor. Guardian, 9 February 2009. http://bit.ly/16Tbv

21 Lifetime Extension Program (LEP) Executive Summary. JASON Program Office. Report JSR-09-334E. http://bit.ly/4ebcS5

Laboratory has said: “If the US decides to stay with the legacy stockpile .. it is much more difficult for the UK to embark on a transformed stockpile, ie to go it alone, because there are so many inter-dependencies”[22] It is unlikely that AWE now has a firm plan to build new secondaries and radiation cases on the scale that was assumed when Project Pegasus was first proposed.

AWE's aspirations for a newly build enriched uranium facility are also related to the assumption that the UK needs to retain a high probability that its warheads will produce a 100 kiloton explosive yield. If problems were detected in the secondary or radiation case this would mean that AWE would be less certain that the warhead would produce the full yield, and it might only produce a lower yield. However, even if AWE had no enriched uranium facilities able to cope with potential problems in the fusion stage, the warheads would still be able to produce a massively destructive fission yield of the type that destroyed the Japanese cities of Hiroshima and Nagasaki in 1945.

5 Planning issues and impacts

Although exempt from planning law for many years, the Ministry of Defence is now required to submit developments at AWE sites to West Berkshire Council, the local planning authority, for planning permission. AWE sees the planning process as an area of high risk, with the potential to delay site development projects significantly, and so the planning application for Project Pegasus will be submitted two years earlier than originally planned to minimise this risk[23].

Although planning applications for development at AWE must now go through the planning process, much of the information that would normally be submitted in support of a normal planning application is withheld from the planning authority and the public. Previous planning applications for projects at AWE sites have been accompanied by a 'Defence Exempt Environmental Appraisal' report, rather than a full environmental impact assessment study. The Defence Exempt Environmental Appraisal report does not include key information about processes, risks, and wastes associated with a proposed facility, and thus it is not possible to independently assess the scale of these impacts. The lack of information means that the planning committee and the public must rely entirely on the judgement of AWE and government regulatory agencies as to whether risks posed by the new facility are acceptable and safeguards for protecting the public are adequate.

In principle the design of the facility will provide adequate safeguards to prevent potential hazards from posing a threat to public and worker safety or the environment, with the majority of the safeguards being engineered features which cannot be altered rather than management procedures which require human action. Limited information about the potential impacts of the enriched uranium facility is available from documents which have been released into the public domain, and NIS considers that the areas with the greatest potential impact on safety and the environment are as follows.

22 Interview with Glen Mara, Principal Associate Director for Weapons Programs, Los Alamos National Laboratory, by the Project on Nuclear Issue (no longer available online).

23 Enriched Uranium Facility Initial Gate Business Case', paragraph 37. Reference DES/NW/PSO/555/35. Ministry of Defence, 3 April 2007.

Storage and handling of enriched uranium metal

Apart from its radioactive properties, enriched uranium is a toxic metal which is also pyrophoric – it rapidly oxidises and is able to ignite spontaneously in air, especially in a powdered form. An accident leading to a fire causing dispersion of enriched uranium is therefore a hazard at any facility handling the material. Such an event would result in a smoke plume containing radioactive microparticles of uranium oxide which can be inhaled or swallowed by bystanders.

An explosion or fire of sufficient magnitude to disperse significant quantities of enriched uranium to the environment has been identified as the 'maximum credible accident' which the proposed Uranium Processing Facility at the US Y-12 complex has been designed to withstand. Such a scenario could result from an operational accident, natural phenomena like earthquakes, or a large aircraft crash into the facility[24].

The Strategic Environmental Assessment study for the current programme to modernise the USA's nuclear weapons infrastructure has analysed expected accident frequencies and consequences, plus annual cancer risks, for various accident scenarios at Y-12's proposed uranium processing facility[25]. The accident with the highest potential consequences to the off-site population is an aircraft crash into the enriched uranium facilities, potentially giving rise to a uranium fire and a criticality incident, which is calculated as having a probability of occurring once every 100,000 years. When probabilities are taken into account, the accident with the highest risk is a fire in the highly enriched uranium storage facility. Estimates of casualties resulting from these accidents have been calculated for the US plant but these are site-specific, and no similar figures have been publicly released for the enriched uranium facility at AWE.

The design basis accident scenarios for Y-12 facility are similar to those which have been identified for Project Pegasus. AWE has assessed that the 'dominant faults' for workers in the enriched uranium facility would be a criticality excursion giving a flash dose of radiation of several Sieverts, and an external dose of X-rays or gamma radiation from a radiography incident. The dominant fault for other workers elsewhere on site and members of the public would be a criticality excursion and large uranium fire caused by aircraft crash and involving most of the enriched uranium inventory[26].

Uranium handling operations in the new facility should be designed to ensure that under normal circumstances radiation doses to on-site workers and members of the public should be insignificant. Workers in the facility itself would, however, be subject to radiation doses, and the facility is to be designed to ensure that during normal operations the dose to any one individual is less than 2 mSv per annum and the average dose is less than 1 mSv per person per annum[27]. Enriched uranium operations normally result in low radiation exposure to workers because uranium-235 has a relatively low activity level.

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24 'Independent Business Case Analysis of Consolidation Options for the Defense Programs SNM and Weapons Production Missions', paragraph 8.3.1.2. Techsource Inc, December 2007. http://bit.ly/4EAFG3

25 'Final Complex Transformation Supplemental Programmatic Environmental Impact Statement'. Chapter 5, paragraph 5.9.12.3. Reference DOS/EIS-0235-S4. US Department of Energy National Nuclear Security Administration, October 2008.

26 'Preliminary Safety Report for the AWE Enriched Uranium Project', page 2. Ministry of Defence, 17 March 2006.

27 'Preliminary Safety Report for the AWE Enriched Uranium Project', page 6. Ministry of Defence, 17 March 2006.

Criticality

A criticality accident occurs when a nuclear chain reaction occurs accidentally in fissile material such as enriched uranium. This releases neutron radiation which is highly dangerous to humans.

Criticality is a significant hazard within plants handling, processing, and storing fissile material. Consequently, the consideration of criticality safety is an integral component of the design process for the new enriched uranium facility. On the basis of AWE's previous accident history, key criticality hazards in the new facility relate to overbatching of fissile material, the presence of excess moderator (including flooding) and the redistribution of fissile material[28]. As far as possible, engineered criticality safety features will be incorporated into the plant design to reduce the risk of a criticality accident[29], and further protection will be provided by controlling and accounting for all fissile materials located within the facility during storage and during movements of enriched uranium between locations[30].

Waste

The enriched uranium facility will generate solid, liquid, and gaseous radioactive waste. Solid radioactive wastes will include both low level waste (LLW) and intermediate level waste (ILW). LLW is usually defined as waste containing levels of radioactivity greater than acceptable for disposal with inert wastes, and waste with a radioactive content of 0.4 Bq/g must be treated as LLW. Solid LLW produced by AWE is dispatched off site to the National Low Level Waste Repository at Drigg in Cumbria. Solid LLW produced from the enriched uranium facility will include process wastes and contaminated consumables such as packaging and disposable protective overclothing[31].

ILW is defined as material which exceeds the upper limits for radioactive content for LLW (4 Gbq / tonne for alpha-emitting wastes and 12 Gbq / tonne for beta / gamma wastes) but does not contain heat producing radioactive material. Wastes from the Pegasus facility that would require classification as ILW include damaged parts, secondary waste generated as a result of decontaminating items to be treated as LLW, swabs and sweepings from cleaning and plant maintenance, and filters from the building ventilation systems. ILW generated at AWE is packaged into drums and stored indefinitely on site pending a national decision on the long term management of such wastes[32].

Gaseous and liquid radioactive wastes from the facility will qualify as LLW. Air and gaseous wastes will pass through the ventilation system serving the furnaces, fume cupboards, and process areas and will be filtered at various stages before release through a stack into the atmosphere. Liquid radioactive wastes will include both aqueous wastes

28 'Preliminary Safety Report for the AWE Enriched Uranium Project', page 15. Ministry of Defence, 17 March 2006.

29 'Preliminary Safety Report for the AWE Enriched Uranium Project', page 14. Ministry of Defence, 17 March 2006.

30 'Preliminary Safety Report for the AWE Enriched Uranium Project', page 16. Ministry of Defence, 17 March 2006.

31 'Waste Management Plan for Enriched Uranium Project', paragraph 2.1. 1. Reference DMP/EUP/LL10705019. Atomic Weapons Establishment, October 2006.

32 'Waste Management Plan for Enriched Uranium Project', paragraph 2.1. 4. Reference DMP/EUP/LL10705019. Atomic Weapons Establishment, October 2006.

and oils contaminated with enriched uranium. Aqueous wastes will be treated to remove particulate enriched uranium and then tankered to AWE's radioactive effluent treatment facility. Radioactively contaminated oils and greases are particularly difficult to deal with and AWE has undertaken research in this area to identify a suitable disposal route[33].

Wastes containing enriched uranium must be treated as accountable nuclear material. Enriched uranium is a potentially harmful fissile material which also has a high financial value, and so it must as far as possible, be recovered from waste streams for reuse. Movements of wastes containing enriched uranium must be accurately recorded to account for the quantity of uranium being transferred.

In addition, the Pegasus facility will also generate a range of non-radioactively contaminated wastes. These include hazardous wastes such as oils, solvents, laboratory chemicals, batteries, aerosols, and paints, inert solid wastes, liquid wastes from process areas which will be treated in AWE's Trade Effluent Treatment Plant, and foul sewage. Construction wastes will be produced during the construction phase of the project.

All wastes and discharges from the facility will have to comply with standards specified on an environmental permit for the facility issued by the Environment Agency.

Ground contamination

The AWE Aldermaston site has had a long and varied industrial history, and past operations have left areas of soil and groundwater contaminated by radioactive materials, explosives, and chemicals. AWE intends to address ground contamination issues during the assessment phase of Project Pegasus and a study of the construction site area will be required to establish the degree of contamination and any necessary remedial action required to deal with it. Groundwater in the gravels underlying AWE Aldermaston is known to be contaminated with organic chemicals and tritium in places, and the site is underlain by a deep chalk aquifer, although a layer of London clay acts as a barrier to the movement of contamination into this aquifer. Before planning permission is granted, AWE will need to satisfy the Environment Agency that satisfactory groundwater protection measures are in place.

Decommissioning

At the end of its life, expected to be in around 2050, the enriched uranium facility will require decommissioning and dismantling. Equipment and active areas contaminated with radioactive material will need to be treated as radioactive waste. The facility will be a reasonably large building, with a floor area of 14,500 square metres, a significant part of which will be working areas for radioactive material, and thus decommissioning will be a substantial task likely to generate appreciable quantities of radioactive waste.

33 'Waste Management Plan for Enriched Uranium Project', paragraph 2.1. 2. Reference DMP/EUP/LL10705019. Atomic Weapons Establishment, October 2006.

6 NIS's view

NIS considers that the multi-million pound costs of building a new enriched uranium facility at Aldermaston cannot be justified at the current time, when deep cuts in public spending planned over the next few years will correspond with the construction period for Project Pegasus.

More importantly, a window of opportunity for nuclear arms control currently exists on the international stage. Following President Obama's speech in Prague in April 2009 and constructive progress in arms negotiations between the USA and Russia, prospects for multilateral nuclear disarmament look promising. There is optimism that the Review Conference for the international Nuclear Non-Proliferation Treaty which is planned for May 2010 in New York will result in further positive steps forward. Now is not the time for the United Kingdom to be upgrading its nuclear weapons infrastructure and commissioning new weapons to replace Trident, with the risk of wrecking hopes for disarmament.

NIS considers that no future programme to develop a new nuclear warhead design at Aldermaston should be given the go-ahead by the government. Rather than increasing the capability of nuclear weapons, the current arsenal of warheads should be 'frozen in time' - maintained and serviced but without any upgrade in performance - until the time comes to take them out of service.

NIS does not believe that it is in the UK's interests to remain a nuclear power indefinitely, and would like to see the government take a lead in future international disarmament initiatives. This would mean that the Trident system would eventually be taken out of service without replacement. A range of options exist for when Trident could be removed from service: either as an early demonstration of good faith as a step towards a world free of nuclear weapons; as currently scheduled in the 2020s; or at a later date following a life extension programme. Which of these options is taken will depend upon the political and international context. In the meantime, work intended for the new enriched uranium facility at Aldermaston should continue in the existing A45 facility until 2016, and thereafter continue in either the A90 facility or the A45 facility (subject to safety upgrades). This work would include final decommissioning of Trident warheads at the end of their life and placing their fissile material components beyond further use for nuclear weapons purposes.

6 Have your say on Project Pegasus

West Berkshire Council is currently consulting on the planning application for the proposed enriched uranium facility at AWE Aldermaston. You can give your comments on the application by writing to:

Mr Clive Inwards
Planning Department
West Berkshire Council
Council Offices
Market Street
Newbury
Berkshire
RG14 5LD

Email: cinwards@westberks.gov.uk

Remember to quote the planning application reference in your letter: 09/02396/COMIND - Enriched Uranium Facility, AWE Aldermaston.

More information on the planning application for Project Pegasus can be found on the NIS website at http://nuclearinfo.org.

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