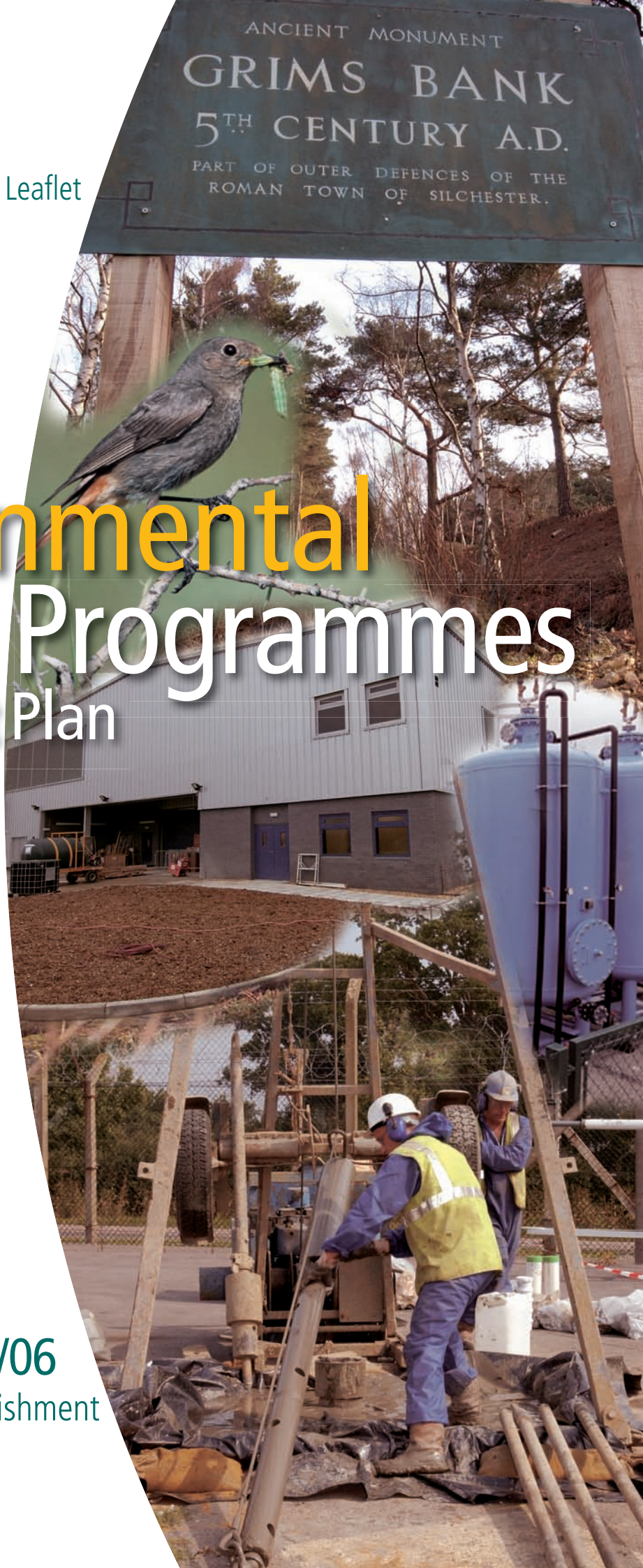
An AWE Public Information Leaflet

Environmental Programmes Management Plan



Update for 2005/06

Atomic Weapons Establishment

ENVIRONMENTAL PROGRAMMES MANAGEMENT PLAN

1. INTRODUCTION

This document is the third annual Public Information Leaflet based on AWE's Environmental Programmes Management Plan. The purpose is to summarise the work that AWE plc plans to carry out over the next ten years on the environmental remediation of the Aldermaston and Burghfield sites. It provides an outline description of the current and future decommissioning waste management and environmental projects.

AWE Aldermaston

2. THE ENVIRONMENTAL PROGRAMMES GROUP 10-YEAR MANAGEMENT PLAN

For more than fifty years AWE has been at the heart of the UK's nuclear deterrent capability being involved in the design, development, manufacture and maintenance of warheads for the defence of the UK. There are now a number of old and redundant facilities as well as other waste management and land remediation issues, which need to be addressed. The scale and complexity of this work necessitates AWE having a sound and proactive management plan which is revised on an annual basis. This plan looks specifically at the next ten years, although the overall programme will last well beyond this.

This Public Information Leaflet summarises the current plan and strategy and provides an overview of the long term aims to assure all stakeholders that the legacy issues are being appropriately addressed.

3. WHAT HAS BEEN ACHIEVED SINCE THE LAST UPDATE

AWE Environmental Programmes Group (EPG) has continued to make good progress over the last year, major successes include:

- Steady progress on the five main decommissioning projects.
- Final closure of the Pangbourne pipeline ahead of schedule on 16 March 2005.
- Further reduction made in the amount of aqueous radioactive effluent generated and treated.
- The new Waste Treatment Plant which has been commissioned and has commenced proof of operations.
- Decommissioning of the old Tritium Facility which has reduced its radiological inventory following the repackaging and storage of items in a new facility. The final decommissioning phase is now underway.
- Cementation of radioactive sludge proceeding to plan. Some 65% of the legacy holding has already been processed, and the project is due for completion in 2006.
- Romoval of the remaining parts of the HORACE reactor in the Research Reactor complex. The demolition of two stores, one a Used Fuel Store and the other a Reactor Equipment Store. The decommissing of the Herald Reactor to a safe and passive state.
- The solvent remediation plant which has been upgraded and continued to successful removed solvent from the groundwater system.
- The second phase of the Aldermaston Land Characterisation project which is complete with no new significant contamination identified.
- Continuation in the development of techniques to remediate contaminated land, which include electro-kinetics and para-magnetics.
- Steady progress towards the next Quinquennial Review (five yearly review of long term decommissioning liabilities) as directed by the Nuclear Installation Inspectorate (NII).
- Further archaeological investigation work carried out at the historic site "Grim's Bank".
- Site remediation work which has enabled the demolition of a large number of buildings to the north of the site. This included the redundant Home Office forensic laboratories.

4. ENVIRONMENTAL PROGRAMMES STRATEGY

AWE's Environmental Health and Safety (EHS) Policy is to ensure that none of our activities harm our employees, the public or the environment. The EHS policy is embedded in AWE's Environmental Programmes Groups (EPG) strategy to deliver decommissioning and waste management programmes as well as other environmental projects. This strategy includes the requirement to:

- Proactively manage the legacies at AWE.
- Agree programmes of work with regulatory bodies.
- Maintain a capability in all key areas utilising trained and skilled AWE staff.
- Establish and maintain a strong working relationship with contracting partners and maintain awareness of best practice in outside industry.
- Develop a track record of success based on projects undertaken.
- Maintain a programme of continuous improvements in safety, programme delivery and cost effectiveness through training and the development of new techniques and ways of working.

In order to implement this strategy AWE directly employs approximately 350 staff and contractors in the Environmental Programmes Group.

5. REGULATIONS AND CONSULTATIONS

In 1997 AWE became a nuclear licensed site under the Nuclear Installations Act of 1965. This means that all AWE nuclear operations and facilities are regulated by the Nuclear Installations Inspectorate (NII), which is a part of the Health and Safety Executive (HSE).

Similarly, all radioactive discharges and disposals from AWE sites are authorised by the Environment Agency (EA). This includes AWE's disposals of low level waste (LLW) to the national repository at Drigg in Cumbria.

AWE has recently contributed to the consultations held by the committee on Radioactive Waste Management (CoRWM), which was appointed by the UK government in 2003 to review the potential options for managing radioactive waste that has no agreed long term solution. Similarly, AWE contributed to the preparation for the Department of Environment, Food and Rural Affairs (DEFRA) public consultation on the future disposal of low level radioactive waste.

6. THE ENVIRONMENAL PROGRAMMES GROUP CAPABILITIES.

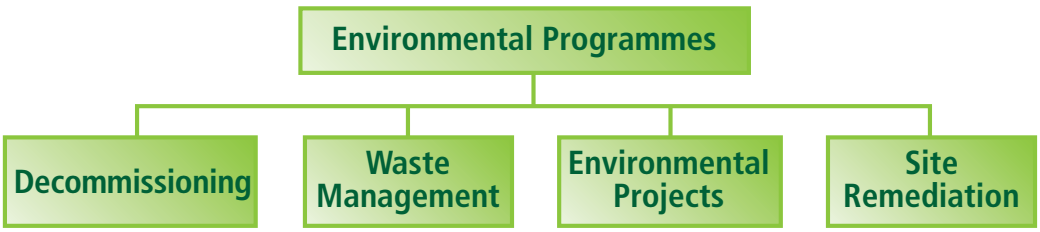
The main capabilities covered by the Environmental Programmes Group are:

Decommissioning group
Is responsible for removing Radiological Hazards from redundant process buildings and the demolition of buildings where necessary.

Environmental Projects group
Is responsible for work on the environmental remediation of the Aldermaston and Burghfield Sites.

Waste Management group
Is responsible for the safe collection, treating, packing and storage or disposal of radiological, trade and toxic waste via regulatory authorised waste routes.

Site remediation group
Is responsible for removing chemical and explosive hazards and demolition of buildings.



7. DECOMMISSIONING GROUP

Steady Progress is being made on a number of Decommissioning Projects:

- **Manufacturing Facility**
  This is currently the largest project in our 10-year plan and will continue well beyond the 10-year horizon of the current management plan. The scope of this work is being revised in the light of operational experience and remains broadly on schedule.

- **Metallurgical Research and Development Facility**
  This facility is in the final phase of removing high hazard radiological material and work has recently completed on the removal of a high activity cell extract system. Sufficient radiological materials have now been removed from the building to dispense with the Criticality Incident Detection Alarm system; this is a major step forward towards the completion of this project.

- **Pilot Facility Project**
  The project is on course for completion by the end of 2010. Extra work on legacy materials will be started during 2006; this is not expected to delay the completion of the main project.

- **Remaining Part of the Research Reactor Project**
  The smaller reactor vessel has been removed and the used fuel store has been demolished. The main reactor vessel has been capped and peripheral equipment removed. Shortly it will be placed under long term care and surveillance so the benefits of radioactive decay can be utilised to simplify the final dismantling.

- **Tritium Facility**
  The final phase of the decommissioning process is now ready to start. Sufficient radiological hazard has now been removed to allow the building hazard category to be reduced significantly. Decommissioning work is scheduled to be completed by the end of 2006; the building will then become available for demolition.

8. WASTE MANAGEMENT GROUP

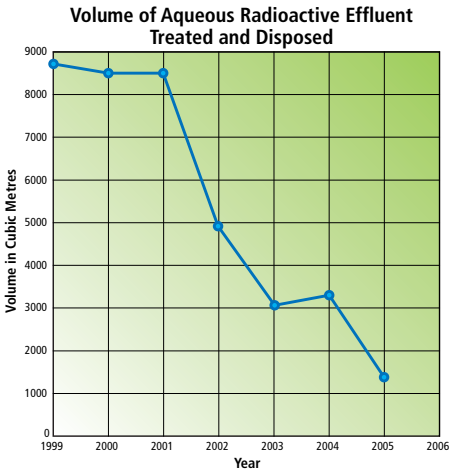
Waste Management activities are largely routine covering the collection, processing, packing and storage or disposal of various types of liquid and solid waste. These wastes arise from operations and legacy decommissioning. In addition to the routine work, initiatives are under way to enhance the treatment and storage of Intermediate Level Waste (ILW) prior to the national repository becoming available.

Waste Management is also involved in the following initiatives:

8.1 Waste Minimisation

AWE has reduced its generation of aqueous radioactive effluent by more than 80% over 5 years. A detailed study was undertaken in 2000, which identified that over half of the effluent was actually rainwater and groundwater ingress to the bunds within the collection system.

Following this study, a significant amount of engineering work was then put into alternative collection systems whereby groundwater ingress was reduced, wastewater was diverted to the correct drain and the remaining aqueous radioactive effluent was collected by road tanker or approved container. Old collection systems were decommissioned. New waste minimisation improvements were introduced in our facilities to further reduce the amount of effluent being generated. The success of this strategy can be seen in the chart. (The increase in 2004 was caused by the relatively wet summer.)



8.2 Legacy Sludge treatment

Radioactive sludge is a by-product of treating aqueous effluent; this sludge has been stored on site in large bulk tanks since disposal at sea ceased in 1983.

A new cementation rig has been built to mix the sludge with cement and pump the mixture into drums. Work started in 2004 to mobilise the effluent to transfer it from the old bulk tanks to new batching tanks ready for processing; this work is now complete. A substantial part of the original sludge holdings has been processed through the rig and solidified into drums, these are now awaiting final disposal. The remaining sludge holding will be cemented into drums during 2006 ready for disposal. As planned the rig will be retained for future use to handle any by-products of the new Waste Treatment Plant. It will also be available to other facilities for the solidification of smaller batches of legacy waste, liquids and chemicals.

8.3 The Future of Radioactive Effluent Treatment at AWE – The New Waste Treatment Plant

The new Waste Treatment Plant has been built to treat AWE's future aqueous radioactive effluent. The plant, which was constructed in just 18 months, entered a period of initial commissioning in September 2004. The construction and commissioning phases of the project have now been completed and boast an excellent safety record, of over 280,000 man-hours worked without a "lost time incident".

The plant is now operational and treating effluent using cutting edge technology, unique to the industry, including evaporation and an advanced form of filtration to remove the radioactivity from the effluent to exceptionally stringent standards. The concentrated radioactive material removed by this process will be solidified and disposed of to the National Low Level Waste Disposal Facility in Cumbria.

8.4 The Pangbourne Pipeline

The final article of this document provides a history of the Pangbourne Pipeline from its conception to its closure in March 2005.

9. ENVIRONMENTAL PROJECTS GROUP

The environmental projects group are responsible for a number of projects engaged on the environmental remediation of the Aldermaston and Burghfield Sites, this work covers:

9.1 Land Characterisation Projects

These projects help AWE to identify any sources of ground contamination by analyses of soil and ground water samples for a variety of contaminants. The main Aldermaston and Burghfield land characterisation projects have been completed. Work will continue in the development of contaminated land techniques including electro-kinetics, para-magnetics and radon gas measurement.

9.2 Solvent Containment Plant and Solvent Source Remediation

The installation of the solvent remediation plant has been completed. It has been commissioned and is fully operational. It is successfully removing solvent from the on site source area.

9.3 TCE (Trichloroethylene) / Source Remediation

An appropriate solution to the remediation of TCE contamination has been identified. A suitable contractor is being identified to implement the solution.

9.4 Decommissioning of the Pangbourne Pipeline (PPL)

Preparatory work has been undertaken for the decommissioning of the PPL. This includes characterisation, stakeholder management, review of the Best Practical Environmental Option (BPEO) and the development of costed options.

9.5 Archaeological dig at Grim's Bank

An archaeological dig has been undertaken at Grim's Bank to improve our understanding of the ancient monument. Visits to the dig were arranged for staff to see the work that was being undertaken. The results should provide an estimate of the age of the ditch and bank.

10. SITE CLEARANCE

Steady progress is being made on site clearance projects at Aldermaston and Burghfield. These projects cover buildings and facilities that are not radiologically contaminated, but are contaminated by other products and substances e.g. explosives. Good progress has been made by the demolition of 'N' area north, the old Home Office building and a combined laboratory and store.

11. LONG TERM PLANS

AWE's environmental remediation programme is long term; it is coupled to the future of the UK's nuclear deterrent and the national strategy for the treatment and disposal of intermediate level waste. The programme also encompasses the assessment for on site storage of intermediate level radioactive waste for up to 100 years.

There is a requirement in the Government White Paper entitled "Review of Radioactive Waste Management Policy", (Command 2919, July 1995), to undertake a five yearly (Quinquennial) review of the policies, strategies and funding provision needed to ensure the safe and prompt remediation of nuclear sites including AWE. The first Quinquennial review identified the lifetime costs for full remediation as £2,560 million at 2001 monetary values. The associated NII report concluded that:

"The strategy proposed by AWE is generally appropriate, as far as it has been defined. The scope of the strategy for both sites is believed to be comprehensive, although for some liabilities further work is required to develop the management strategy. The overall strategy is generally sufficiently flexible to be adapted to take account of changing circumstances."

AWE is aware of changes that the UK government is introducing to the civil nuclear industry with the formation of the Nuclear Decommissioning Authority (NDA). Whilst not directly involved, AWE will continue to monitor the approach developed by the NDA to ensure that any relevant lessons are learnt.

12. A short History of the Pangbourne Pipeline (PPL)

Until its closure earlier this year the PPL formed part of the AWE Aldermaston aqueous effluent management system. The PPL discharged very low level radioactive liquid effluent from site once it had been treated, analysed and confirmed acceptable for discharge. This was in compliance with the conditions laid down in the discharge authorisation issued by the Environment Agency. The effluent was discharged into the River Thames between Pangbourne and Purley and this route had been used to discharge liquid effluent from the Aldermaston site since 1952. The pipeline served AWE well and was a safe and effective disposal route throughout its 53 years of service. Following the commitment AWE made to stop using the PPL by April 2005, AWE worked hard to close the pipeline and achieved this goal ahead of schedule on the 16th March 2005.

The official valve-closing ceremony took place at AWE's Aldermaston site and was performed by the Head of the Environment Agency and AWE Managing Director. The Head of the Environment Agency praised AWE both for completing the closure of the Pangbourne Pipeline on time and for the company's success in minimising the waste it generates.

Specification and Route of the PPL

The PPL is approximately 18.5 kilometres long and consists of two pipes laid adjacent to one another. The lines start with 5 inch (12.7cm) internal diameter pipework reducing to 3 inches (7.62cm) internal diameter at approximately 9km as the route descends the escarpment at Sulhamstead into the Kennet valley. Between the final pumphouse and the River Thames, a distance of approximately 600 metres, the pipes revert back to a 5 inch (12.7cm) diameter before discharging into the River Thames via twin sparge pipes each fitted with 6 nozzles.

The pipeline passes under several local features including the River Kennet (close to the Kennet and Avon Canal), the Reading to Newbury high speed railway line, the M4 motorway, the A4 trunk road and the Reading to Didcot railway line as well as numerous minor roads. At all of these places the pipeline is sleeved, the longest sleeve being 78 metres long under the M4. The pipeline is coated by a layer of bitumen (~0.5 cm thick) to provide corrosion protection when buried in the ground. Along the pipeline there are 44 inspection pits of various configurations.

Operation of the PPL

Over the operational lifetime the pipe discharged in excess of 1.25 million cubic metres of treated liquid effluent (the equivalent of one hours normal river flow past a fixed point) with only minimal maintenance repairs and rare mechanical failure.

Environmental Impact

The environmental impact of the PPL throughout its lifetime has, through a series of surveys, been shown to be minimal. The surveys of the soil surrounding the valve pits together with sediment and mussel samples collected by dive teams from the River Thames have been analysed periodically over several decades. Results have shown not only a minimal environmental impact but also a steadily decreasing one. The environmental stewardship of the PPL will continue to be an essential part of the remediation.

13. FURTHER INFORMATION

For further details please consult the following:

- AWE's website – www.awe.co.uk.
- AWE's Corporate Communications Team - email: communityrelations@awe.co.uk.

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To find out more about AWE visit our website
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