



Harwell Review 2007/08



Introduction by Alan Neal, Head of Site



The last financial year has been a demanding one at Harwell. As well as managing our day-to-day activities, we have been preparing for the restructuring of the business.

Under these changes, Harwell and its sister site, Winfrith in Dorset, become a single management unit which will eventually form a new company, Research Sites Restoration Limited (RSRL).

Preparations for these important structural changes have been challenging and time-consuming. What made this particularly difficult was the need to simultaneously manage the changes to the organisation and the reduction in the decommissioning programme, and hence staffing numbers, to meet the funding constraints.

Despite these additional pressures, over the past year we have continued to deliver our decommissioning programme safely, cost-effectively and efficiently.

I am particularly pleased that during this time we improved our excellent safety performance record. Even so, we are continuing to focus considerable efforts on safety, actively involving staff in a number of initiatives aimed at raising awareness and ensuring ongoing improvement in this area.

We also made progress towards our goal of decommissioning the site. Since the beginning of decommissioning work in 1991, almost 1.5 million square feet of buildings and nuclear research facilities have been demolished at Harwell, an achievement of which we can be proud.

A number of landmark successes have been achieved during the year under report.

Highlights include:

- The first Category 1 facility at Harwell reached the final stages of decommissioning and was re-categorised as a Category 4 facility.
- Work to clear the eastern part of the site moved forward with the decommissioning of a former 1940s RAF sergeants' mess building.
- Wastes from the Liquid Effluent Treatment Plant chemical dosing plant were segregated from the overall waste stream, significantly reducing waste management costs.
- The second Retrieval Machine (RM2), which will be used to significantly speed up the rate at which we can remove waste cans from storage holes, was delivered and assembled, and inactive commissioning began.
- The processing of more than 2,500 cans of intermediate level waste (ILW) through the Head End Cells was completed.

Land that has been restored, delicensed and released for re-use will form part of the Harwell Science and Innovation Campus, a world-class centre of excellence.

This decommissioning work continued, achieving considerable successes, despite funding from the Nuclear Decommissioning Authority being significantly reduced in 2007, as financial support was prioritised towards reducing hazards at other NDA sites.

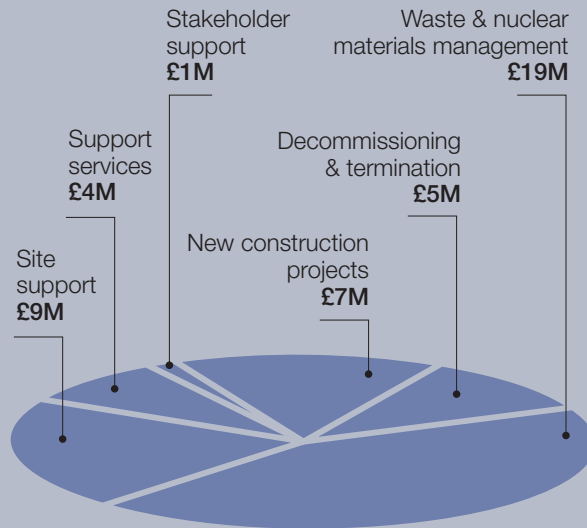
The reductions in the future planned decommissioning programme at Harwell led to a direct challenge from the Nuclear Installations Inspectorate (NII) that the programme no longer resulted in the nuclear facilities being decommissioned as soon as reasonably practical. As a consequence, the NII took regulatory action to ensure that changes from the 2006 programme milestones could only be made with their approval.

I am mindful that the successes you will read about in this Annual Review would not have been possible without the dedication of our staff, their Trade Union representatives and our contractors. I would like to pay tribute to them and thank them for their hard work and conscientiousness throughout the year.

Message from the NDA by Brian Burnett



Major areas of expenditure at Harwell for 2007/08



The Nuclear Decommissioning Authority (NDA) was set up by the Government in 2005 to deliver safe, sustainable and publicly acceptable solutions to the challenge of nuclear clean-up and waste management.

We work in partnership with Site Licence Companies (SLCs) like Harwell to ensure sites are decommissioned and cleaned up, and waste is disposed of.

During this financial year, the NDA welcomed the progress made towards the decommissioning of the Harwell site and the advances achieved in the retrieval and processing of historic wastes, in preparation for longer-term storage and eventual disposal.

We acknowledge the restrictions that financial constraints have placed on the various decommissioning and waste management programmes and appreciate the positive way in which the workforce at Harwell has responded to the challenges of these changing circumstances.

As Alan Neal has also noted, despite the potential distractions of restructuring and funding issues, throughout this time Harwell has maintained a clear focus on safety. During the period, both the level of safety events reported and the number of injuries to staff have reduced. Considerable endeavours continue to ensure this high standard is not only maintained but improved upon.

This has again been a year of considerable achievements at Harwell. I look forward to many more during the coming year.

Front cover picture: TO BE SUPPLIED

Safe working

Safe working is, and will remain, our top priority.

With this in mind, we constantly seek ways to improve all that we do. We apply rigorous health, safety and environment standards to protect our people, the public and our surroundings.

The number of safety events reported during the period remained low and the number of injuries to staff continued to reduce. Despite this improvement, we continue to focus hard on safety and on working to improve our record.

Safe delivery of the site restoration programme depends on the active involvement of all our staff and the level of reporting of unusual occurrences (UNORs) increased during the year. The introduction of a recognition and reward scheme has supported this improvement.

Site-wide improvements are managed through the Safety, Health and Environment Improvement and Sustained Excellence Plan. This has enabled the management team to focus resources on key issues.

UKAEA's management system as a whole was recertified as compliant with both ISO 9001:2000 and ISO 14001:2004 quality standards.

Safety, Health and Environment Improvement Plan

The focus of the Harwell Safety, Health and Environment (SHE) Improvement Plan for 2007/8 was to strive towards our goals of no accidents, no injuries and no damage to the environment.

This was achieved through a positive focusing of efforts on increasing 'near miss' reporting and hazard spotting. A Safety and Environment Reward Scheme was introduced to encourage the raising of 'near miss' and unusual occurrence reports; the scheme comprising awards to employees, contractors and to local and national charities.

Overall there has been a significant decrease in the number of accidents that have led to injury. A new Operating Experience and Learn Function has also been established on site to encourage and promote the learning of lessons from incidents and accidents that have occurred within UKAEA and from across UK industry.

Emergency Planning

During the past 12 months the Emergency Planning Organisation has carried out a number of emergency exercises.

A new Site Emergency Control Room was commissioned in the early part of 2007 and was firmly established in June during the site security exercise.



Safety indicators: 2007/08	
Lost time accidents (> 3 days)	1 (UKAEA - 0; Contractors/Tenants - 1)
Safety events	3
Total reportable incident rate	0.45
Average annual radiation dose to workers	0.08 mSv
Maximum annual radiation dose to workers	1.52 mSv

In June 2007, the annual security/counter-terrorism exercise was completed, in conjunction with the Civil Nuclear Constabulary, and in October the annual site Level 1 demonstration exercise for the NII took place.

The ongoing training programme has been enthusiastically received, including Command and Control training for both the Site Emergency Control Room and Local Incident Controllers.

A number of new recruits have been bought into various roles within the Site Emergency Organisation.

Top: Regular staff safety sessions have led to a positive increase in 'near miss' reporting and hazard spotting.



Security

High levels of security are maintained to protect the integrity of the site. The maintenance of continuing and consistent high standards during the period under review resulted in there being no breaches of security involving protectively marked information and nuclear materials, in storage or in transit.

Environmental Management

Each year UKAEA sets itself challenging Environmental Improvement Programmes. We again completed all the targets at Harwell during the year. New challenges have been set for 2008/09.

Discharges of radioactivity to the environment remain at low levels and well within the limits set by the Environment Agency.

UKAEA undertakes a programme of environmental monitoring on site, in accordance with statutory requirements. We regularly sample items including air, soil, vegetables, grass, water and fish. Results show the levels of contamination on site to be consistently low and well within authorised limits.

Top: Radiation and ground monitoring is a regular part of all decommissioning projects.

During the reporting period there were no reportable environmental events on site and no enforcement actions taken.

The Harwell site estate is managed by UKAEA with contracted support. A comprehensive ecology study is undertaken periodically and the recommendations are transposed, along with routine estate management practices, into a prioritised biodiversity action plan.

Throughout 2007, Harwell stakeholders were given the opportunity to comment on the Best Practicable Environmental Option Study being carried out by UKAEA to identify the option for disposal of some of our wastes.

Consumption of utilities by UKAEA at Harwell continued to reduce during 2007.

Waste recycling rates continued to increase throughout 2007, with many UKAEA facilities achieving levels that equate to more than double the national average of 20%.

Utilities:		2007	2006
Energy consumption:	Elec.	10,057,901 kWh	11,132,342 kWh
	Gas	16,029,343 kWh	18,011,268 kWh
Water usage		24,673 m ³	24,536 m ³

Radiological discharges calendar year 2007:			
	Alpha	Beta	Tritium
Gaseous (Rolling twelve month figure as a % of Authorisation)	6.3%	3.8%	2.0%
Liquid (Rolling twelve month figure as a % of Authorisation)	9.3%	9.5%	1.3%
Solid transfer (Total amount for year)	6 GBq	88 GBq	8 GBq

Decommissioned and demolished

Decommissioning

Harwell's pioneering work on the decommissioning of redundant buildings has continued. Large parts of the site have now been cleared for potential development as part of the Harwell Science and Innovation Campus.

Radiochemistry facility

The major programme to decommission and repackage redundant gloveboxes from the radiochemistry facility was completed during the period, a year early and under budget. This means that for the first time in more than 50 years, the building has no free-standing, active gloveboxes.

Completion of the decommissioning work at the facility was suspended in April 2007, due to funding constraints, though other clean-up projects have continued.

A total of 28 canisters of radium contaminated wastes, the result of operations dating back to the 1990s, were conditioned and packaged in its cell line facility ready for long-term storage in the facility's remote handling wing. This work is expected to continue until March 2009.

The robust 1940s-constructed facility is also being used to provide interim storage for Intermediate Level Waste, in support of Harwell's waste treatment centre. This arrangement will continue until the materials can be removed to an alternative storage location or for disposal.

The eventual plan is to place this building into a safe, efficient and cost-effective Care and Maintenance (C&M) regime until the re-start of decommissioning activities. To this end, initiatives to reduce hazards and maintain essential plant, such as ventilation systems, have been ongoing.

Post Irradiation Examination facility

A post-irradiation examination facility became the first Category 1 facility at Harwell to reach the final stages of decommissioning. It was re-categorised as a Category 4 facility reflecting the completion of work to reduce its residual radioactivity to low levels. Plans are being developed to complete the decommissioning process.

Former Engineering Division building

Two buildings dating back to the 1950s – a building used for many years for engineering design and management and an adjacent office building used by maintenance staff – were demolished. The work began in February 2007 and was completed in June 2007.

Top: Radium contaminated waste was conditioned and packaged in the radiochemistry facility.



Chemical dosing plant

An innovative decontamination technique was trialed during the decommissioning and demolition of the chemical dosing building, part of Harwell's Liquid Effluent Treatment Plant. The technique enabled about 300 tonnes of debris to be segregated from the overall waste stream.

This significantly cut waste costs, by reducing the amount of low level waste and enabling the segregated waste to be disposed as 'exempt waste.'

Material Development Division laboratories

Harwell's Material Development Division laboratories were also decontaminated, stripped and demolished.

Former sergeants' mess

Work began on decommissioning a building dating back to the 1930s and formerly used as an RAF sergeants' mess, as part of the project to clear the eastern part of the site. By the year end, around 80% of the building had been demolished. The work was scheduled to be completed by April 2008.



Waste management

Harwell specialises in the safe, secure and efficient management of both the waste stored on site from past research work and that generated by its current decommissioning activities.

RM2

Harwell's second Retrieval Machine (RM2) was delivered in March 2007 and inactive commissioning began in August. The machine will be used to accelerate the recovery of legacy intermediate level waste (ILW) from the tube stores. RM2 is due to be fully operational in 2009.

Radium waste

One of the key objectives Harwell achieved was the completion of work to process cans of radium contaminated waste. By the end of the reporting period, a total of 28 cans of radium waste, dating back to operations in the 1990s, had been processed and despatched for storage.

ILW

More than 2,500 cans of ILW were processed through Harwell's Head End Cells, as part of waste recovery operations for the Vault Store. The waste is being characterised and loaded into stainless steel drums which will be processed in the Waste Encapsulation Plant.

Waste Encapsulation Plant

Construction of Harwell's Waste Encapsulation Plant (WEP) is nearing completion. The plant will enable UKAEA to process ILW from its storage facilities. Off-site works testing of plant and equipment has also been carried out. The plant is scheduled to undergo commissioning in 2008 and become fully operational in 2009. Encapsulated waste will be stored at Harwell until a national repository is available for ILW.

Liquid Effluent Treatment Plant

The programme of work to recover and immobilise high activity sludge from Harwell's Liquid Effluent Treatment Plant (LETP) tanks is making excellent progress. Thirty drums were encapsulated in 2007. In addition, over 100 drums of lower activity sludge were encapsulated.

Post Irradiation Examination facility

A variety of highly radioactive legacy materials from Harwell and Winfrith were processed through a post irradiation examination facility. The materials were packaged in temporary containers and sent for final packaging. The facility also developed a strategy with the Environment Agency for recovering sources in support of the national source recovery programme.

Land remediation

Almost 1.5 million sq ft of building footprint have now been demolished from the site.

Three major projects to remediate areas of contaminated land on the site have been completed since the start of decommissioning. As a result, seven hectares of land have been delicensed.

Replacement groundwater plant

A replacement groundwater containment plant to collect chemically contaminated groundwater from the Western Storage Area is now running successfully. The new plant incorporates many improvements including more than halving the energy consumption and remote monitoring and operation. The original plant was demolished in 2007.

Top left: Second retrieval machine (RM2).

Top middle: Waste Encapsulation Plant (WEP) under construction.

Top right: Building demolition.

Engaging with stakeholders and the local community

Stakeholders

Harwell's Local Stakeholder Group (LSG) subgroup met several times during the period to consider alternative end states, with Harwell SLC supporting the meetings.

After consulting with their various constituencies, LSG members voted to recommend that the end state for Harwell* should be a 100% delicensed** site by 2020. The final draft report was submitted to the NDA.

**This applies only to the NDA designated part of the campus, which is historically the nuclear licensed area associated with UKAEA.*

***Where the word "delicensed" has the meaning that the site should have no areas with a Nuclear Site Licence issued under the Nuclear Installations Act.*

Community relations

Harwell continued with an active programme of sponsorships and donations. During the year, the site made donations to many local organisations including the Betjeman Millennium Park, the World Pooh Sticks Championship, a number of local schools and preschools and various youth football and cricket clubs.

Left: The Oxfordshire Federation of Women's Institutes visits Harwell's active handling facility.

Right: Ed Vaizey MP with the Ark preschool in Wantage.

Freedom of Information

The introduction of the Freedom of Information Act on 1 January 2005 gave everyone the right to access information held by UKAEA. During the year a number of FOI requests were received at Harwell. All were dealt with to the enquirer's satisfaction and within the statutory 20 working days' period.



Harwell Science and Innovation Campus



Harwell Science and Innovation Campus is central to the Government's plans for major science facilities in the UK and for delivering economic growth from public sector researchers working with business.

The progressive decommissioning of the Harwell site is allowing land to be delicensed and released for redevelopment as part of the Harwell Science and Innovation Campus. The Campus is already home to world-leading research facilities and a growing range of commercial occupiers, and is seeing major investment and development.

UKAEA and the Science and Technology Facilities Council (STFC) are in the process of completing a joint venture with an investing private sector partner to deliver the ambitious vision for the Campus. A Government announcement on this is expected later in 2008.

UKAEA will provide land, site knowledge and operational capabilities to the joint venture and will share in the returns. Representatives of UKAEA and STFC will sit on the Board of the joint venture and participate in setting its strategy and in key decisions.

The joint venture will develop new science, innovation and business property and work with STFC and other stakeholders to improve the economic impact of investment in science.



Continuing to raise standards

The performance of the site management and operations contractor is measured by delivery of a series of Performance-Based Incentives (PBIs) agreed with the NDA. Fee is dependent upon successful completion of PBIs. This table summarises the PBIs for Harwell.

a) Build Waste Encapsulation Plant

PBI	Outcome
Complete construction for WEP	Achieved
Complete mechanical installation for WEP in 6 stages:	
Conveyor system	Achieved
Windows	Not achieved
Drum inspection facility	Achieved
Grout cell	Achieved
Grout mixing plant	Achieved
HVAC installation	Achieved

b) Retrieval Machine 2 (RM2)

PBI	Outcome
Issue active commissioning schedule of RM2	Achieved
Complete inactive commissioning of RM2	Achieved

c) Operation of Groundwater Containment Plant

– Achieve an average extraction rate of not less than 1000m³ each quarter

PBI	Outcome
Q1	Achieved
Q2	Achieved
Q3	Achieved
Q4	Achieved

d) LETP Sludge Processing

PBI	Outcome
Treat and drum first 50 drums of LLW sludges arising from the WHESOE tank	Achieved
Treat and drum further 60 drums	Achieved
Drum and encapsulate first 10 drums of sludges from HLA tank	Achieved
Drum and encapsulate further 20 drums	Achieved

e) Solid Waste and Nuclear Waste Processing

PBI	Outcome
RHILW can recovery of first 52 cans from tube stores	Achieved
RHILW can recovery of further 80 cans	Achieved
RHILW can processing of first 250 cans through HEC line	Achieved
RHILW can processing of further 300 cans	Achieved
CHILW processing of first 15 legacy NDS crates	Achieved
CHILW processing of further 25 legacy NDS crates	Achieved

f) Waste Processing

PBI	Outcome
Conditioning/repacking of first 10 packages (RHILW)	Achieved
Conditioning/repacking of next 14 packages (RHILW)	Achieved

Generic Performance-Based Incentives (PBIs) 2007/08

a) Shared Services Organisation Implementation and Support Service Cost Reduction

PBI	Outcome
Establish interim project team, agree and implement longer term governance	Achieved
Project reporting	Achieved
Detailed cost analysis	Achieved
Common expenditure / performance reporting	Achieved
Develop business case	Achieved
Finalise implementation plan	Achieved
Undertake investigations	Achieved
Develop standard business case methodology	Achieved
Complete first strategic procurement bundle	Achieved
In year cost reduction reporting	Achieved
Planned savings reporting	Achieved

b) Accelerated Decommissioning through Fixed Cost Reduction

PBI	Outcome
Provision of project plan and baseline change proposal	Achieved
Provision of detailed cost analysis	Achieved
Delivery of approved plan to deliver 10% fixed cost reduction	Achieved
Provision of savings plan	Achieved
Provision of report detailing fixed cost reductions	Achieved

c) Lifecycle Baseline Improvements Project (2007/2008) – Deliver robust and consistently compiled Lifetime Plans

PBI	Outcome
Issue SLC specific plan for producing Lifetime Plan 2008	Achieved
Issue SLC specific LTP Quality Plan 2008	Achieved
Issue SLC specific LTP Risk Register 2008	Achieved
Submission of the LTP improvement plan	Achieved
Interim progress stage 1	Achieved
Review incremental improvement over Mar 2007 baseline	Achieved
Review incremental improvement over no reds	Achieved
Review incremental improvement with no more than 3 ambers	Achieved

d) Hazard Reduction; Baseline & Implementation Plan

PBI	Outcome
Establish suitably qualified individuals to coordinate SLC effort	Achieved
Develop, agree and adopt standardised data-set for hazard baseline	Achieved
Develop, agree and adopt standardised prioritisation process	Achieved
Produce draft hazard baseline	Achieved
Issue draft hazard reduction plan with 2008 LTP	Achieved
Workforce Transition and Skills Plan	
- Draft document	Achieved
Workforce Transition and Skills Plan	
- Final document	Achieved
Research and Development - delivery of draft TBURD report	
Research and Development - delivery of TBURD report	Achieved
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For further information

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