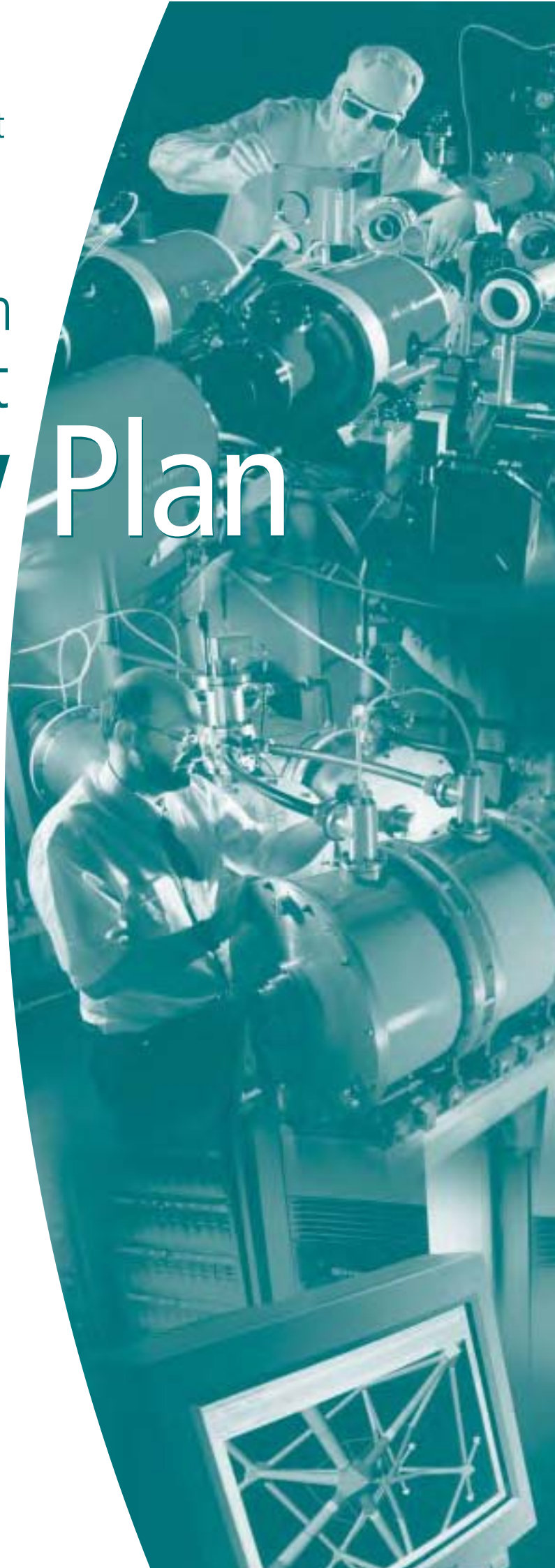
An AWE Public Information Leaflet

The AWE Aldermaston Site Development Strategy Plan



Site Development Strategy Plan

This information leaflet has been published by AWE plc, which manages and operates the United Kingdom's Atomic Weapons Establishment (AWE) on behalf of the Secretary of State for Defence.

It is intended to give our neighbours, the general public and the West Berkshire Council Planning Authority, an explanation of our plans and reasons for the future development of our main site at Aldermaston.

The 750-acre AWE Aldermaston Site

Background

AWE Aldermaston has been the headquarters of the Atomic Weapons Establishment for more than 50 years. It continues to play a vital role in national defence.

However, we face many scientific and technical challenges in the future, which will require modernisation and a significant investment in new buildings and facilities at the site over the next few years.

At the same time, we want to improve the appearance of AWE Aldermaston from its existing industrial factory image to that of a science and technology centre - one that is more fitting to our reputation for world-class science and technology and that will enable greater accessibility for the academic and business communities.

We have already closed our component factory at AWE Cardiff and have withdrawn from our range facility at AWE Foulness.

We have a long-term intention to reduce our land holdings further by concentrating all of our operations at AWE Aldermaston, if this proves to be feasible.

We aim to create a more attractive place to work and lessen our physical and visual impact on the local area. Our proposals therefore include major environmental improvement projects.

Underpinning all of this is our ongoing commitment that the safety of the community, our staff and the environment will remain our highest priority in all that we do.

The Site Development Plan

We have produced a Site Development Strategy Plan (SDSP) for AWE Aldermaston to help us to meet our needs for the future. It has been prepared by members of our own staff who have an in depth knowledge of the site, with technical input from architects, landscape specialists, engineers and planners. It contains individual proposals supported by an overall planning philosophy.

The SDSP is not yet final or prescriptive and will be dependent upon commercial and financial considerations as well as the conditions of our nuclear operating licences and the requirements of the Ministry of Defence.

Nevertheless, at this stage, we are anxious to share our thinking with members of the Local Planning Authority and with our neighbours and the wider public.

Because the Plan itself contains information relating to national security and is therefore classified, we decided to produce this unclassified public information leaflet.

We have attempted to give as full and open account of our planning proposals as possible within the bounds of security and, as a result, this leaflet provides the largest collection of information about AWE's infrastructure that has ever been publicly available.

We hope it will provide the basis of informed discussion between the Company and the Local Planning Authority, members of the community and our staff.

Our aim is to ensure that, when we submit individual Notices of Proposed Development, there will be no surprises and our proposals will be able to be viewed in the context of our overall vision for the future.

In developing the SDSP we have taken account of the West Berkshire Council Local Plan, which contains a number of policies that are relevant to development at AWE. In particular, we are discussing with the Local Authority proposals for improving traffic management and road safety at the entrances to AWE Aldermaston.

We will review the SDSP year by year and will take proper account of the views expressed by the West Berkshire Council, the local community and others.

Key Requirements

In developing the SDSP, the following key requirements were identified. -

- To meet AWE's future operational needs safely, securely and affordably.
- To increase operational efficiency.
- To achieve environmental improvements.
- To improve working conditions and the aesthetic appearance of the site and move towards a 'science and technology centre' concept.
- To provide a framework for the financing and phasing of new developments.
- To enhance relations with our workforce, the local community and local authorities through the provision of information.

Our Mission

We first had to consider the operational demands that will be placed upon AWE plc in the 21st Century.

Our mission is to provide the warheads for the United Kingdom's nuclear deterrent. We are, in fact, responsible for the whole life cycle of warheads, from initial research and design, manufacturing and in-service support, through to final disposal.

The Government's Strategic Defence Review in 1998 laid down the requirements for AWE for the future. While highlighting the need for progress on arms control, it confirmed the United Kingdom continues to require a credible and effective nuclear deterrent.

It stated that: *"For as long as Britain has nuclear forces, we will ensure that we have a robust capability at the Atomic Weapons Establishment."*

Trident missile launch

The submarine-launched Trident ballistic missile is today the United Kingdom's sole nuclear weapon system. Our prime task over the coming years, therefore, is to support the Trident warhead stockpile and maintain it safely and reliably in service.

At the same time we are required to maintain a capability to design a successor warhead to Trident should it ever be required in the future.

In addition, we must decommission and dispose of redundant warheads and, as part of our mission, develop the skills, technologies and techniques that could provide the confidence necessary to support future international arms limitation treaties.

Following ratification by the United Kingdom in 1998 of the Comprehensive Nuclear Test Ban Treaty, the maintenance of Trident and the capability to build a successor will have to be achieved without conducting nuclear tests.

This poses considerable scientific and technical challenges. We are therefore developing a complex science-based programme at AWE that will require special facilities across a variety of disciplines.

These are the main drivers for the future development of the Aldermaston site.

Apart from our core business, described above, we also hope that science, medicine, industry and commerce will benefit from spin-off technologies from the nuclear weapons programme.

This will require greater contacts and collaboration with universities and commercial enterprises.

We aim to achieve this by creating a science and technology centre, which would enable the necessary interaction between our own staff and our external scientific and business partners without compromising the security of the main site.

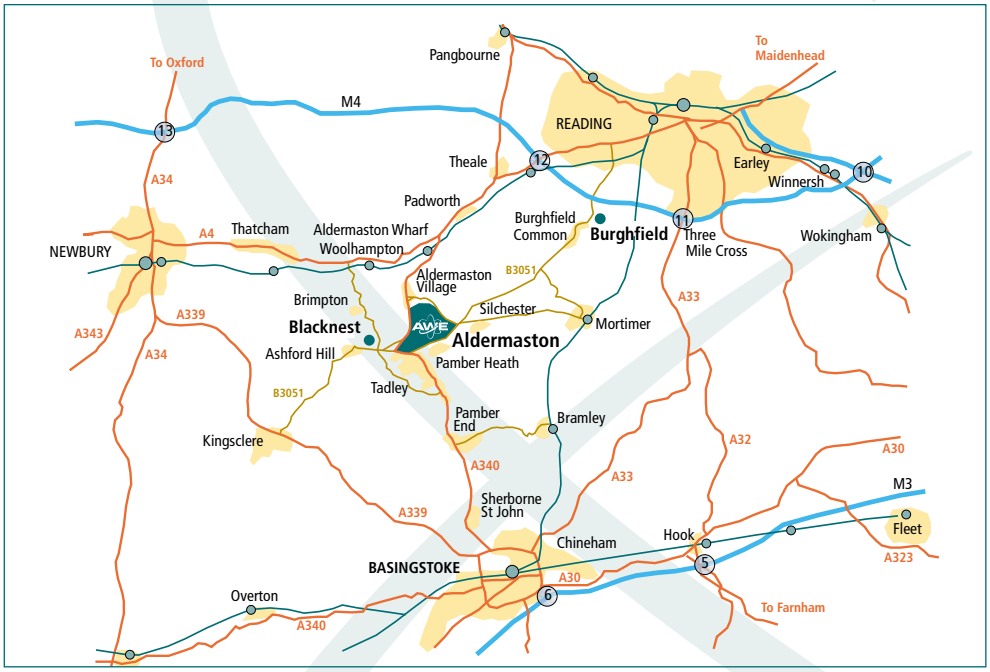
The Sites

Currently there are three AWE sites - all within West Berkshire Council's area.

AWE Aldermaston, near the village of Aldermaston on the Berkshire/Hampshire border is the largest. It is a 750-acre former World War II airfield, which is our headquarters and centre of research, design and component manufacture.

AWE Burghfield, seven miles to the north-east of Aldermaston, is a 280-acre former munitions factory where warheads are assembled, serviced and finally decommissioned at the end of their operational lives.

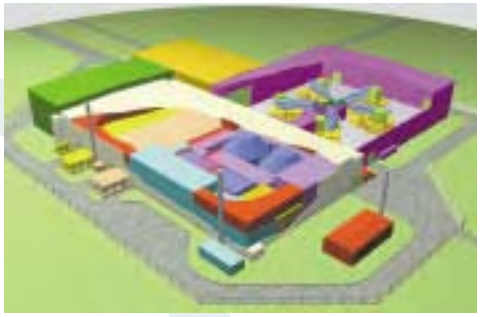
AWE Blacknest is a former country house in the village of Brimpton. It is a satellite of AWE Aldermaston and our centre of seismic research and treaty verification. Our scientists at Blacknest support the Comprehensive Nuclear Test Ban Treaty by monitoring earthquakes and underground explosions around the world in order to detect any illegal nuclear weapon tests.



Development to support our Science Programme

Four areas of research are essential to our science programme in a nuclear test ban era - hydrodynamics, laser physics, materials studies and high-performance computing. These are the main areas for future investment to support our mission.

Hydrodynamics



A computer generated image of the proposed Hydrodynamics Research Facility

Hydrodynamics is the science of forces acting on or exerted by fluids. It is an important field of investigation for AWE's scientists since, during a nuclear explosion, materials behave like fluids as they are subjected to extremes of pressure and shock.

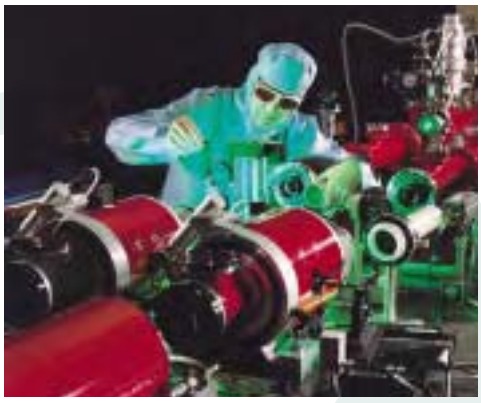
At AWE Aldermaston we conduct hydrodynamics experiments in which weapon mock-ups and small amounts of fissile material are subjected to explosive shocks. The experiments are 'photographed' by giant x-ray machines and analysed with a range of diagnostic equipment.

The experiments are conducted inside thick concrete chambers lined with steel. The chambers are fitted with sophisticated filtration equipment to ensure the safety of staff and protection of the environment.

A new Hydrodynamics Research Facility, with greatly improved diagnostics, is planned for the future. It will enable us not only to continue to certify the performance and safety of the nuclear stockpile but will also maintain our world leader status in this important field of science.

It is planned to submit a Notice of Proposed Development for this facility to the West Berkshire Council Planning Authority in due course.

Laser Physics



A technician at work on AWE's high energy HELEN Laser

High-powered lasers enable us to replicate in the laboratory the physical conditions at the heart of a nuclear explosion - albeit on a minute scale. The HELEN laser at AWE, now more than 20 years old, was the first in the world to be used for this type of experiment and AWE has led the way in research in this area.

In the future, AWE's scientists will be able to conduct laser experiments in the giant United States' National Ignition Facility, currently under construction.

AWE is also working towards a successor system to the HELEN laser in the United Kingdom. This is another project, as yet still in the concept phase, that has not yet received approval. However, we envisage that it could become the United Kingdom's own national laser facility, for use by both AWE and our universities in the study of plasma physics.

If we proceed with this project it would also become the subject of a Notice of Proposed Development.

Materials Science

A nuclear warhead contains a variety of special materials, including metals, inorganic salts, rubbers, foams, adhesives, high explosives and radioactive substances. The study of the behaviour of materials as they age is therefore an essential area of research for AWE.

In the past, the performance and reliability of materials could be proved by nuclear testing. Now that testing is no longer possible, our scientists are being challenged to understand the underlying phenomena of the ageing of interacting components in order to predict what changes to expect.

The role of materials science is particularly important in the case of the Trident weapon, since it is likely to remain in service for perhaps up to 30 years.

Modern laboratory and test facilities may therefore be required at AWE Aldermaston to support this important work and, again, these would be subject to individual Notices of Proposed Development.

Supercomputing

AWE's new supercomputer is capable of 3,000,000,000,000 calculations a second.

Finally, high performance computing provides the three-dimensional modelling and simulation requirements for AWE's Physics, Engineering and Materials departments. All three of these have programmes that place increasing demands on our available computing resources.

All of the information from the hydrodynamics and laser experiments and the data from materials ageing studies, together with previous actual test results, are used in refining computer codes used in the mathematical modelling of nuclear weapon performance. This will be our principal means of verifying the performance and safety of the United Kingdom's nuclear stockpile in the future.

Later this year we will be commissioning our new IBM supercomputer in one of our existing buildings. This machine is capable of 3,000,000,000,000 calculations a second. It will place us in the world's front rank in terms of computational power and will enable us to take full advantage of newly developed computer codes. We aim to expand our computing power still further in the future.

Production Requirements

Production at AWE includes both the manufacture of weapon components and the assembly and disassembly of nuclear warheads.

Component manufacture at AWE Aldermaston.

This involves a wide range of radioactive, explosive and conventional materials and complex processes. These demand stringent safety procedures, highly skilled staff and specialist facilities.

The majority of component manufacture is undertaken at AWE Aldermaston. Once completed, components and sub assemblies are transported to AWE Burghfield for assembly into completed warheads. AWE Burghfield is also responsible for servicing and refurbishing operational warheads and for the decommissioning of redundant warheads.

AWE's warhead decommissioning team with the last of the Royal Air Force's nuclear weapons.

We are currently considering the feasibility of moving all of these operations to our Aldermaston site.

However, in order to achieve this, we would need to replicate or relocate at AWE Aldermaston some of the facilities, including assembly, currently available at AWE Burghfield. This would involve a considerable investment. It would also be necessary to ensure that our programme could be maintained and that the requirements of the regulating authorities continued to be satisfied. Any proposal would, of course, be subject to the planning process.

Consolidation of operations at AWE Aldermaston therefore requires careful consideration and will be very much dependent upon the business case. Although it offers many potential planning and environmental advantages - including the release of the Burghfield site for other purposes - we have not yet reached a conclusion.

Operations at AWE Burghfield (above) could be relocated at AWE Aldermaston - although a decision has yet to be made.

We are also considering moving AWE Blacknest's operations to AWE Aldermaston. Again, no decision has been made but the seismic research and treaty verification work currently undertaken at AWE Blacknest would fit naturally within the science and technology centre proposed for AWE Aldermaston.

Buildings

There are more than 1,200 buildings on the Aldermaston site, more than half of which were constructed before 1960.

The condition and importance of buildings is being monitored as part of a five year rolling programme. Nearly 400 individual buildings have been assessed so far and many have been selected for closure.

In addition to the special facilities already mentioned, it is our intention to demolish unwanted or outdated buildings and, where necessary, build modern replacements incorporating the latest safety and energy saving features. In fact, we already have an established decommissioning programme which is progressing well.

One of the AWE Aldermaston buildings certified for decommissioning.

A number of new buildings are planned for the western end of the site, where we propose to re-locate the Main Gate and Reception, with improved links to the public highways. We have earmarked this area for the possible location of a Visitors' Centre and Conference Centre.

Further detailed proposals for the western end of the site are still under consideration with the aim of achieving easier access for visitors and to facilitate interaction between our staff and academic and business partners from outside. We believe the careful and creative development of a new 'entrance' to the site will assist in creating the science and technology centre image we wish to achieve.

It is proposed to relocate the AWE Aldermaston Main Gate (above) to the western area of the site.

Environmental Issues

Regular monitoring and independent studies have demonstrated that our effect on the environment after more than 50 years of operations is negligible.

Nevertheless, we do have some historic environmental issues that must be addressed. A priority therefore is to complete our programme to deal with legacy contamination resulting from the use of AWE Aldermaston as an airfield and as an industrial site. Details of this were outlined in our public information leaflet "Environmental Stewardship" published in July 2001.

Over recent years we have been successful in further reducing our already extremely low emissions to the environment by adopting modern technology and improved working practices.

AWE conducts routine environmental monitoring.

Our proposed liquid waste treatment plant, for example, which will process water such as hand and floor washings generated in our production areas at AWE Aldermaston, will remove more than 99.9 per cent of any radioactive material before discharging virtually pure water to the environment.

This new plant, which is the subject of a recent Notice of Proposed Development submitted to the local planning authority, will enable us to close the Pangbourne Pipeline that currently discharges our low-level radioactive liquid effluent to the River Thames.

As well as these physical environmental issues the SDSP has also considered ways of improving the visual aspects of the site and it includes an analysis of the existing components that make up the landscape and architecture.

It highlights the fact that the external image of AWE Aldermaston is currently dominated by major features, such as our security fences, large slab-sided buildings, the Boiler House with its tall chimneys and the 60 kilometres of large diameter steam main which provide heating across the site. All of these contribute to the industrial character of the site.

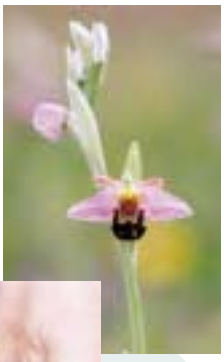
Indeed, some of these give the site a somewhat sinister appearance. For example, some people do not appreciate that only steam passes through the pipes and there are many myths about its possible use.

A section of the 60 kilometres of steampipe at AWE Aldermaston.

We intend to replace the Boiler House with a more energy efficient system that will reduce costs and carbon dioxide emissions. This will enable us to demolish the Boiler House and remove large sections of the steam pipes and other steam infrastructure, resulting in a secondary environmental advantage.

Not all parts of the site are unattractive. There are areas of natural beauty where plants and animals flourish under the watchful care of our volunteer Conservation Group. We intend to preserve and extend these areas and continue to protect the flora and fauna. We are anxious also to preserve the building heritage of the site and we are therefore identifying those buildings that are of historic or architectural importance.

A variety of other smaller scale environmental improvement projects are proposed in the SDSP, including a tree and shrub planting programme.



AWE Aldermaston is rich in wildlife and flora.

The effect of street furniture, signage, lighting, car parking, colour and scale on the nature of the site have also been considered. For example, modern street lighting would improve illumination during the hours of darkness whilst maintaining security lighting and minimising 'light pollution.'

It is a major aim to improve amenities for our employees. New buildings will be designed to be attractive and easy places to work, featuring energy saving technologies.

Working areas being improved

Car parking facilities will be planned in conjunction with new buildings and, together with improved traffic management, this will minimise vehicle journeys on site. We also have plans to improve facilities for pedestrians and cyclists.

It is proposed to make improvements at the eastern end of the site to enable better use of existing ecologically attractive areas. These include a recreational pavilion by one of the wildlife ponds, changes to reduce road noise to improve the amenity value of secluded areas of natural beauty and tracks for cycling and running for our staff.

AWE has invested in a fleet of bicycles to reduce motor vehicle movements around the Aldermaston site.

Artist's impression of new Western Entrance to AWE.

Site Improvement Examples

Existing condition

Typical Boulevard Arrangement.

Proposed environmental improvements

Existing condition

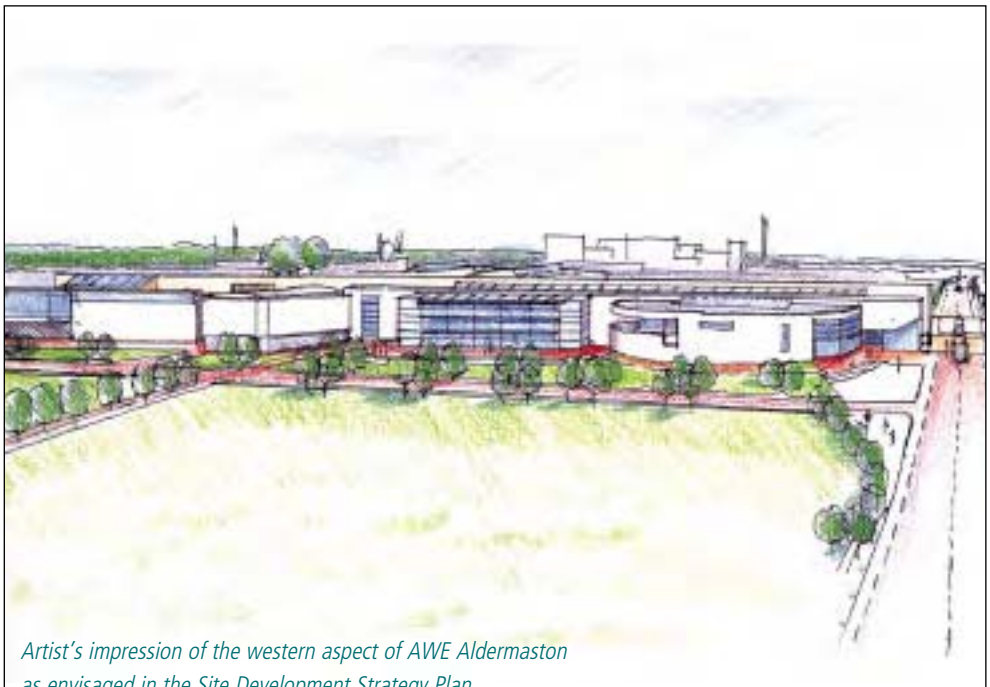
Internal Courtyard Space.

Proposed environmental improvements

Existing condition

Decoy Pond.

Proposed amenity improvement



Artist's impression of the western aspect of AWE Aldermaston as envisaged in the Site Development Strategy Plan.

Conclusion

In planning the future development of AWE Aldermaston we have had the following aims in mind. –

- To maintain safety and security.
- To provide modern facilities to meet our scientific and technical challenges.
- To improve operational efficiency.
- To improve the appearance of the site and move from the image of an industrial complex to that of a science and technology centre.
- To create pleasant working conditions and achieve environmental improvements.

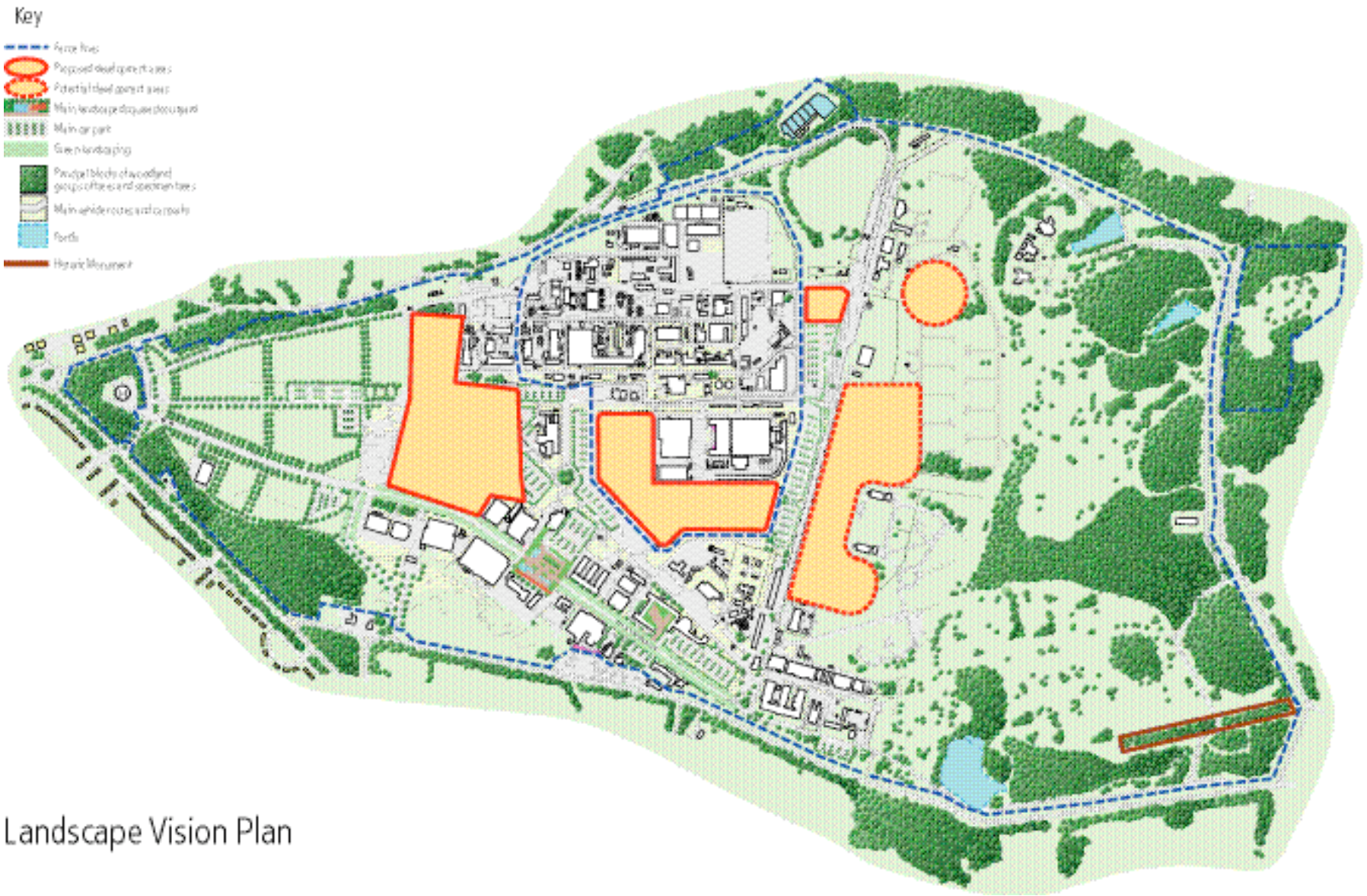
Next Steps

The AWE Aldermaston Site Development Strategy Plan puts into context the individual planning applications that may be made to the West Berkshire Council Planning Authority over the coming years.

AWE and the Ministry of Defence, as owner of the sites, will discuss the issues raised with the Planning Authority and with members of the AWE Local Liaison Committee and the local community. Proper account of views expressed will be taken.

Further information can be obtained by writing to the AWE Community Relations Officer, AWE plc, at AWE Aldermaston, Reading, RG7 4PR.

Information about AWE can be found on our website www.awe.co.uk



Landscape Vision Plan

AWE plc Aldermaston • Reading • Berkshire • RG7 4PR

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