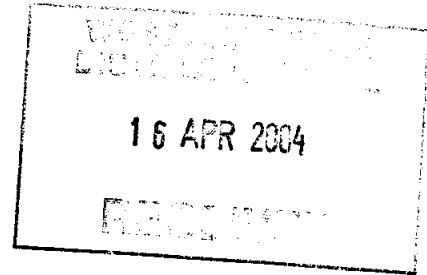


Chire Upton Brown.

04/00045

STATEMENT



DOE CIRCULAR 18/84

**NOTICE OF PROPOSED DEVELOPMENT ON BEHALF OF THE
MINISTRY OF DEFENCE**

Application No.
BDB - 58343

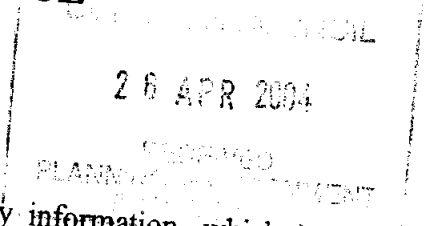
AWE ALDERMASTON

PROPOSED LASER RESEARCH FACILITY

OUTLINE PLANNING CLEARANCE

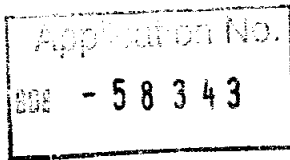
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1. BACKGROUND.

AWE plc is in the process of modernising the facilities and improving the visual impact of the Aldermaston site through a major investment programme which will result in the removal and replacement of a large number of outdated and inefficient buildings and the creation of a modern and efficient technology environment. The aim is to provide world class science and technology facilities, to create a more attractive place to work and at the same time lessen the physical and visual impact on the local area.

AWE proposes to build a replacement laser research facility at the western end of the site. The development will replace an existing laser research facility on site, which is now 20 years old. The development will include research facilities, offices, workshop areas, and laboratories.

The development will be designed to meet modern standards and to accommodate approximately 50 staff, transferred from the existing facility on site. No increase in staff is anticipated and there will be no new jobs created. The development will be designed to be highly energy efficient, with a 50 year minimum design life.

The overall development at this West End of the Aldermaston Site will comprise three main facilities, this replacement Laser Facility, a new Conference Centre and a replacement Office Accommodation development. These are as described in the Public Information Leaflet about The Site Development Plan published in June 2002 and updated in September 2003.

2. DESCRIPTION of PROPOSED DEVELOPMENT.

The proposed building will be in keeping with the current overall development of the Aldermaston site and will be located in an area already populated with industrial buildings of similar height and mass.

The building will be no more than 26 metres high on the eastern elevation. The western elevation, most immediately visible to the public, will be a maximum of 21 metres in height. The approximate footprint dimensions are 110 metres long and 70 metres wide, this width allowing for a loading bay to the target hall.

The development will comprise space for laser generation plant, a target hall for the laser experiments, preparation rooms, laser diagnostics, laser development, optical coating and photometry. There will also be general office areas, a conference room, a control room, clean rooms, and a visitor/ exhibition area all contained in the same building. In addition there will be minor buildings to house plant immediately adjacent to the main building.

The laser facility is used to conduct experiments on minute particles of matter for the study of plasma physics. Experiments are conducted in a controlled and enclosed environment with shielding up to five feet thick which ensures that no hazard is created outside the controlled environment.

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3. LOCATION of PROPOSED DEVELOPMENT.

The proposed location is shown in Appendix A, section 6.1. This is a brownfield site with no other beneficial use. The development will be visible from the public road, A340, at Paices Hill, for a short distance 100 metres from the proposed building at its closest point. However the building will be well screened by existing trees on the site perimeter, further enhanced by new planting and landscaping as necessary to ensure minimal visual impact.

4. ENVIRONMENTAL IMPACT.

As the development falls outside the description and scope of developments covered in either Schedule 1 or Schedule 2 of The Town and Country Planning (Environmental Impact Assessment) Regulations 1999, a formal Environmental Impact Statement (EIS) for the proposed development has not been provided.

However, a document containing additional Environmental Information is attached at Appendix B, which summarises the environmental information derived from informal assessments.

The anticipated programme for the construction of the New Laser Facility is shown below

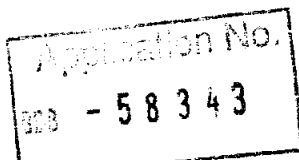
Site Preparation	September 2004 to April 2005
Earthworks, excavation, sub structures and Superstructure	April 2005 through to March 2006
Handover	March 2006 through to November 2006

This programme is subject to confirmation at detail design stage.

There will not be a permanent increase in traffic at the West Gate entrance (A340) to site as a consequence of this development. It is considered that because the staff are already employed at AWE they will continue to enter site at an entrance dependant on where they live, rather than switching to using the West Gate. In any case, the number of persons employed in this facility is small in relation to overall site numbers. Visitors are likely to be in small numbers, 10 or 20 at a time being the maximum likely figure.

Any increased traffic during the construction period will reduce back to the site norm very rapidly. No significant new employment will arise due to this development and no significant changes to traffic patterns will occur.

A number of buildings have been demolished in the vicinity of the development (See in Appendix A at 6.2). Concrete and brickwork arisings from the site clearance, having received free from hazard clearance for removal, have been crushed and stored on site for re-use as backfill material, thus avoiding HGV movements from site and landfill disposal issues. The amount currently stored is of the order of 3600 cubic metres, which has resulted in 258 fewer lorry loads being transported on the public highway. In addition to this approximately 7000

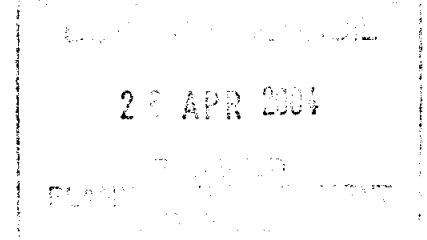


cubic metres has been used on the site as infill thus resulting in a further 600 fewer lorry loads using the public highway.

The development will be designed to minimise energy useage as far as is practicable. To this end the provisions of the "Building Research Establishment Environmental Assessment Method" (BREEAM) will be met with a target award of "Excellent".

Among other energy saving methods, use will be made of the following to reduce energy usage in non-experimental areas:

- Water saving devices (e.g. 'Hippos' in cisterns)
- High efficiency thermal insulation of the building
- Heat transfer (eg in heating and cooling plant)
- Natural ventilation
- Energy efficient lighting (presence and daylight detection) in office and toilet areas
- High efficiency boilers



5. RESERVED MATTERS

As concept drawings have still to be prepared the final detail of the following matters will be reserved until designs are submitted:-

- Height
- Size of the buildings
- Final siting within the identified area
- External appearance and material selection
- Amenity features
- Landscaping

6. APPENDIX A: PROPOSAL DRAWINGS

6.1. Site Plan Ref West End/Orion/Planning/001

6.2. Layout of Demolished Buildings Ref West End/Demolition/Planning/001

7. APPENDIX B: Additional Environmental Information

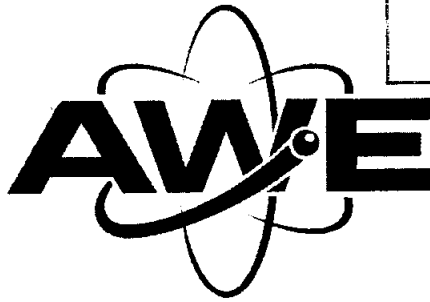
7.1. Additional Environmental Information for The Proposed ORION Laser Research Facility at AWE(A) Ref DSD01/AS/HAA13000/001

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Reference: HA/HAA14/A/3/AS/1000373

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PLANNING

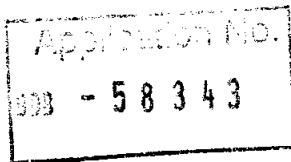
Additional Environmental Information For The Proposed Orion LASER Research Facility at AWE (A) Issue 02

Originated by: _____ Date: _____
Ian D Ward
Site Planning Liaison Manager

Authorised by: _____ Date: _____
Brian Smith
Orion Construction Project Manager

Approved by: _____ Date: _____
G Wall
Manager Environment

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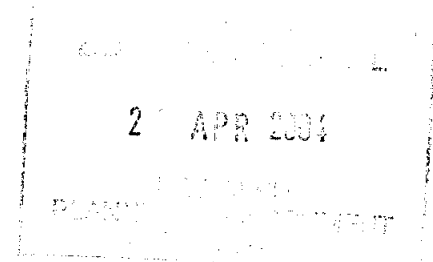
Ref: HA/HAA14/A/3/AS/1000373

Version: Issue 02

Date: March 2004

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Application No.
 58343

Ref: HA/HAA14/A/3/AS/1000373

Version: Issue 02

Date: March 2004

DOCUMENT ISSUE RECORD

Issue	Description of Issue	Author	Approved	Authorised for Issue	Date
Issue 02	Title changes to reflect that this is not a statutory EIS submission . Clarifying notes with further information added to text	I Ward			March 2004

AMENDMENT RECORD

22 APR 2004

Amendment Number	Date Issued	Date Inserted	Amended by (signature)	Pages Affected

Amendments must be recorded in the table above.

Explanatory Notes

Issue 02 March 2004 contains explanatory notes generally immediately preceding or following the text to which they refer. These notes are in bold italic ***Thus*** and will be contained inside a text box, as is this note. Apart from correcting obvious spelling errors the text of the previous issue is unchanged.

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0 EXECUTIVE SUMMARY

This report has been prepared in support of the Notice of Proposed Development to be submitted on behalf of the Secretary of State for Defence for the development of a Research Facility at AWE Aldermaston.

The requirements of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999, and subsequent amendments to date, have been used as a basis for determining the requirements of this report and to consider environmental impacts resulting from the construction and operation of the proposed facility.

The proposed building will constitute a Laser Research Facility. The building will replace most of the current facilities excluding target fabrication and amplifier testing. The new facility is to comprise the following:

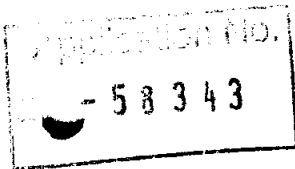
A new laser facility including associated offices and laboratories (approximately 6200m² footprint). The facility will have its own security fencing and access gates. The new facility will include laser equipment housed in a laser hall, a target hall, control room and supporting offices and laboratories.

The Facility will comply with the Site Licence Conditions, as regulated by the Nuclear Installations Inspectorate (NII, an arm of the Health and Safety Executive HSE), whilst environmental issues are regulated by the Environment Agency (EA). AWE currently operates an Environmental Management System which has been independently accredited by LRQA to ISO 14001.

The environment, both local and regional, into which it is proposed to locate the facility, is described, including the location of population centres, geology, hydrogeology, surface water quality, location of landfills and the location of sites of nature significance. The report concludes that the immediate on-site area of the proposed development is heavily industrialised and not of notable environmental significance. The local area surrounding the site is generally rural in nature and contains good quality surface waters and notable assemblages of flora and fauna, and Sites of Special Scientific Interest. There is some solvent contamination present in the soil close the site of the proposed development.

Consequences of construction, operational and decommissioning activities are considered. The report concludes that the proposed Facility will not cause a significant negative impact to the local environment.

The volumes of liquid and solid effluent estimated to arise from the facility are not likely to be significant compared with the site total [Appendix 8: Operational Phase PREA]. Aerial discharges will be within EA consents, whilst secondary potential impacts, such as associated additional traffic movements, will be limited to the construction phase and will not cause any discernible additional environmental impacts once the facility is in operational mode.



1 INTRODUCTION

Note: The development falls outside the descriptions of development referred to in Schedules 1 and 2 of the Town and Country Planning (Environmental Impact Assessment) Regulations 1999 and therefore an Environmental Impact Statement is not required in this case.

This document presents environmental information, in accordance with the requirements of the Secretary of State for Defence's Policy regarding environmental assessment, and AWE internal procedures to minimise the environmental impact of new facilities constructed at AWE.

This Environmental Assessment has been prepared to support a Notice of Proposed Development (NOPD) on behalf of MoD for a LASER Research Facility at AWE Aldermaston.

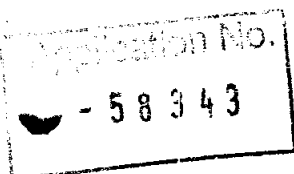
This Assessment of the environmental impacts of the proposed development has been carried out in accordance with the requirements in Schedule 3 of Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 (Ref. 1) and in line with Department of the Environment guidance (Refs. 2, 3 and 4) and the company procedure for compliance with Planning Consents [Ref. 5].

This Environmental Assessment reviews the proposed facility and the operation of the facility in order to identify those features which have the potential to give rise to environmental effects. The report considers the materials which will be used during normal operations and their possible routes of entry into the environment and other potential environmental impacts.

Detailed safety considerations associated with the construction of the Facility and its operation will be assessed within the Environment, Health and Safety Plan for the project, and in detail as part of the Safety Case, which will be prepared in support of this development, in line with AWE Company Policy and requirements of the Nuclear Site Licence.

The new Laser Research Facility at AWE will provide a UK facility serving the needs of both AWE and the wider academic and weapon physics communities. The new facility, coupled with access to high energy US facilities, will meet the needs of weapon designers for experimental access to the plasma regime well into the next decade.

The new facility will provide data in novel High Energy Density regimes for material properties studies, and will provide an opportunity to perform leading edge science across a broad range of relevant areas of research.



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Date: March 2004

The new facility will include laser equipment housed in a laser hall, a target hall, control room and supporting offices and laboratories. A full specification of equipment is given in the conceptual study [Ref. 6].

The proposed option to build this facility at AWE Aldermaston has been assessed as the best solution based on the results of a conceptual option study [Ref. 6].

The next stage of mandatory safety documentation will report on the design options, safety principles and acceptance criteria. The optimum technical and safety solutions are being developed to fully engineer the preferred option. Safety justification for this will be included in future safety documentation and will be approved in accordance with AWE Safety Management Procedures for a Category B change – onsite change only (see CSI 801). The overall building will be constructed in-line with the relevant building regulations and to modern standards.

The location for the facility has been decided upon by taking into account the operational requirements of the site as a whole and is as shown in figure 1. AWE is a Nuclear Licensed Site, regulated by the NII. The site operates in line with 36 Licence Conditions. These conditions, specifically Licence Condition 19 (Construction or Installation of New Plant) and Licence Condition 20, (Modification of Plant Under Construction) exist to cover the development of new facilities. The proposed facility is to be designed and operated in line with these and other Licence Conditions.

Within this document 'the AWE site' refers to the 250 hectares covered by AWE (Aldermaston), whilst the 'proposed location' refers to the hectare on which it is proposed to build the Facility.

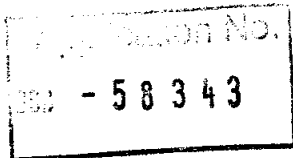
2 FACILITY DESCRIPTION

The new Laser Research Facility at AWE will provide a UK facility serving the needs of both AWE and the wider academic and weapon physics communities. [Ref. 6].

2.1 Structure

The proposed facility will include laser equipment housed in a laser hall, a target hall, control room and supporting offices and laboratories. A full specification of structural requirements is given in the Initial Statement of Brief [Ref. 7]

The facility is to be equipped with suitable ventilation systems and utilities to meet the safety, environmental and operational requirements. The building is to be constructed in line with all relevant Building Regulations and reviews will be carried in accordance with the AWE Safety Management System (SMS) at all stages of the design, construction, operation and eventual decommissioning.



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Date: March 2004

The exact building dimensions will be subject to detailed design but will be contained within a maximum envelope of 100m long by 40m wide by 22m high.

Note: The NOPD states that the building approximate footprint dimensions are 110 metres long and 60 m wide, with a height of no more than 26m on the eastern elevation and 21m on the western elevation, most immediately visible to the public.

The NOPD also states that the final detail of height and size are reserved until concept drawings have been prepared.

Current indications are that the building will have approximate footprint dimensions of 98 metres long and 61 metres wide, with an eastern elevation height of 26m and a western elevation height of 21m.

The facility will contain a Heating and Ventilation and Air Conditioning (HVAC) system to control the atmosphere within the facility.

The facility is designed to operate for a 25-year life span.

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2.2 Waste Disposal

2.2.1 Trade Wastes

The facility will generate hazardous wastes which will be kept as low a level as is reasonably practicable and handled using industry best practice techniques and processes in accordance with the Environmental Protection Act (1990) and under the duty of care imposed by the waste management licensing regime. The wastes are likely to consist of oil, metals, toxic and non-toxic chamber washings (note: Any oil requiring removal from site will be subject to disposal to a registered oil treatment organisation.). The amount of toxic waste produced during routine cleanings will be negligible. Toxic waste will include:

- Lead
- beryllium
- Solvents
- Oils

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Note: The main sources of trade waste will be from chemicals and solvents, used in the laboratories and darkrooms. It is expected that the quantities of liquid trade waste will not exceed those currently produced at HELEN, which has a trade waste agreement of 2000 litres per month.

The preparation of beryllium components will be undertaken in a dedicated fume cupboard, which will have a filtered extract system to prevent aerial discharges. beryllium disposal routes are available on-site. Experience from the HELEN facility has shown that beryllium contamination has not been an issue.

2.2.2 Radiological Waste

A small amount of radioactive waste could be generated during non-routine operations including Low Level Waste (LLW) and Intermediate Level Waste (ILW). There will be some activation products in the target area from neutron releases. All radioactive waste generated will have to be subject to the Radioactive Substances Act 1993 which requires that waste is minimised according to Best Practical Means (BPM).

All radioactive discharges will be below consent limits and authorisations imposed under the Radioactive Substances Act (1993).

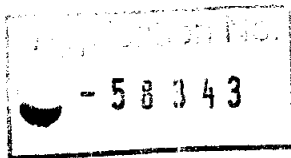
Note: Various target materials are used in laser experiments. These can be made radioactive by the laser / target interaction. Exact quantities of radioactive materials produced are currently being assessed, however this will be in the order of milligrams per year.

For example a typical gold target used in Orion has a mass of 10 milligrams. A minute quantity of the target can be made radioactive by the laser. The estimated quantity of low level radioactive gold which will be produced per year is less than 1 microgram (1.0×10^{-6} grams)

The low-level radioactive particulate produced will either be collected by the vacuum pump filters or collected onto tissues when the target chamber is cleaned. It is these filters and tissues containing minute traces of radioactive material that will enter the controlled Low Level Radioactive Waste stream.

Small target support structures that are very close to the target also are made radioactive by the interactions of the protons generated by the laser / target interaction. These support structures are stored locally and returned to service after a few days when the radioactivity has reached background levels. It is no longer envisioned that any ILW will be generated in the facility.

Very small amounts of tritium may be used in the facility. The annual discharge of tritium will be orders of magnitude less than the existing site authorisation.



3 ENVIRONMENTAL IMPACT DURING CONSTRUCTION ACTIVITIES

A Pre-Tender Environment, Safety and Health Plan (ESH) (Ref. HA/HAA12/A/3/SC/100253) has been prepared in support of the proposed development of the Facility, in line with the requirements of the Construction, Design and Management Regulations, 1994. This outlines potential environmental impacts associated with the construction, the successful contractor will augment this with a Construction Phase Health and Safety Plan, prior to the commencement of the construction activities. The ESH plan will be used to make the construction team aware of potential impacts and to define any specific procedures that are required to ensure that construction activities do not cause adverse environmental impacts. In addition to the ESH plan a Project Register of Environmental Aspects (PREA) will also be prepared for the construction and operational phases of the project. This is a specific requirement of CSI 1601 to ensure compliance with the AWE EMS. The construction phase and operational phase PREAs are presented in Appendix 7 and Appendix 8.

3.1 Traffic

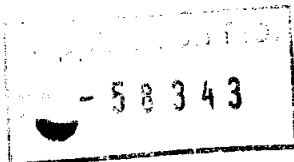
AWE has undertaken a traffic survey and transport strategy (AWE/CD09/B/03-04/GFR11); this document projects the expected increases in traffic due to the construction of all major projects including Orion. Orion will only contribute a relatively small increase in traffic to the cumulative total, approximately 13 HGV's plus a maximum of 150 workers per day. The majority of vehicle movement will be during the normal working day (7am-6pm). The project management team are currently reviewing two options for producing the required concrete.

1. To bring the concrete on in ready mixed concrete trucks, this will entail continuous 24-hour operation for up to one week for major elements, i.e. one truck arriving directly after another.
2. To install a concrete batching plant, this equipment could be used by all MIS projects in the vicinity. A temporary batching plant would be exempt from the Pollution Prevention and Control Regulations 2000.

The management team has yet to decide on which option is most appropriate for the project and this document will be updated when the decision is made.

The main routes to be used are expected to be the A4 and A340 through Aldermaston Wharf and Village and the A340 through Tadley (the main routes from the M4 and M3). These routes will see a small increase in the number of vehicles using them during peak times. The primary entrance used for this traffic will be the West end of site; this will increase the congestion in this area by a minor amount.

During the peak of development work (2005) there is expected to be a 9% increase in the number of vehicles on site (approximately an additional 130 vehicles per hour during peak working hours (7-8am & 4-5pm)), when



compared with the current number of vehicles. Site traffic currently accounts for 61% of traffic on the surrounding roads during peak hours.

3.2 Noise

The noise from construction of Orion is not expected to be excessive. However it is a construction site and will be generated, most work will be carried out during working hours so no disturbance is expected offsite. This section will be updated when the cumulative effect of all development projects has been assessed in a Noise Survey.

3.3 Surface Water Runoff

Surface water runoff will be captured from the new facility via the surface water drainage system and discharged through one of the surface water outfalls, which is approved and consented by the EA. The facility will be using 'grey' water for its domestic facilities.

Note: See paragraph 4.8 for further information on water saving schemes, which will be used during normal operations.

3.4 Ecology

The proposed Facility is not being developed on an area of ecological significance. The existing site is considered to be brownfield as it lies within the boundary of Aldermaston site and is a paved area. The general area is already developed as part of the AWE (A) site and contains buildings with supply roads and paving. Intervening areas are grassed. The area is poorly colonised and receives only basic ground maintenance. As such the impact upon flora and fauna has been identified as minimal in preliminary assessments. However the ecology issues arising during the pre-construction phase will be dealt with e.g. a mature tree is located on the site of the proposed development and its removal will need to be timed to minimise disruption to habitats that currently depend on it. All nesting birds are protected, so a survey will be required before removal of this tree.

3.5 Soil

EDGE Consultants UK LTD conducted an intrusive soil and groundwater contamination and geotechnical investigation on the proposed location. The investigation found elevated levels of lead in one soil sample; this exceeded Contaminated Land Exposure Assessment (CLEA) guidance for Industrial/Commercial Use. In Groundwater tests of four boreholes levels of Volatile Organic Compounds (VOCs) were found to be present above Environment Agency Environmental Quality Standards. The proposed location is adjacent to the A12Q area where VOCs are known to be present in relatively high levels, a remediation project is currently underway and the levels of VOCs found at the Laser Facility Site is expected to reduce. Due to the low levels of contamination, any contamination will be dealt with as part of AWE's site wide remediation commitment. Radiological testing has not identified any areas of concern to human health or soil disposal.

Any areas of made ground containing chemical contamination will be removed and disposed of in accordance with the requirements of Part 2 of the Environmental Protection Act 1990 and the associated waste statutory instruments such as the Waste Management Licensing regulations 1994, Special waste regulations 1996. The potential for the creation of dust due to wind-blown soil / building material particles is considered minimal, due to the limited potential area of exposed soil, the short time of exposure and adopting measures such as water damping as necessary. Thus the excavation of material from the area of the proposed Facility will have no adverse environmental impacts.

3.6 Groundwater

Groundwater abstracted during construction will be pumped into containers, which are integrally banded, and sampled by EMG before being disposed of via Trade Waste.

Note: IBC stands for Intermediate Bulk Containers, these are UN approved 1m3 plastic containers in a metal cage.

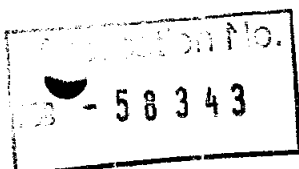
4 ENVIRONMENTAL IMPACT DURING ROUTINE OPERATIONS

Each key environmental area has been identified and the interactive impacts of the proposed building during normal operations are reviewed below.

The decommissioning of the facility at the end of its life will be undertaken once a specific decommissioning safety case has been produced. At this stage only the general method of decommissioning of the facility, and any potential environmental impacts, are known. However, the facility is being designed with decommissioning issues in mind. The generation of neutrons will lead to the activation of some equipment in the target area which will generate additional volumes of radioactive waste during eventual decommissioning. To reduce the amount of radioactive waste a six-month delay will be applied, this time period and associated decay will increase the amount of waste which can be sent as clean, free release. Radioactive waste remaining after this period will be the target chamber and pipework, vacuum pumps and chryso coils. A BPM for decommissioning will be produced as appropriate.

4.1 Humans

The proposed Facility is designed to operate in a safe manner, to protect both the local population and staff working within the facility and within the AWE site. It will be subject to a justification on safety grounds at each stage of its life cycle, i.e. design, construction, operation and decommissioning. This will be achieved through the production of Safety Cases for the various phases. All requirements of the Nuclear Site Licence will be met prior to construction commencing, throughout construction, commissioning and the operation of the Facility, and during decommissioning.



All requirements of building regulations will be met by the design, along with compliance with other statutory regulations including the Health and Safety at Work etc. Act, 1974. Due to AWE security requirements the fire safety requirements will be designed into the building e.g. specialist safety spaces and low fire hazard corridors, a document outlining these measures has been provided to the HSE and the project team are currently awaiting their comments.

A Facility Emergency Response Plan (FERP) will be prepared for site workers, during construction, and for staff during operations. The FERP will also contain details of contingency plans for accidental environmental discharges.

4.2 Radiation

Certain areas of the Facility will be designated for control under the Ionising Radiation Regulations, 1999. As the area outside the facility will not require designation under the Ionising Radiation Regulations, 1999, there will be no adverse effect on the environment due to the radiation levels of the material used within the building.

The facility will also be designed to modern standards for laser safety (non-ionising radiation). The design will be in accordance with British Standards 60825 series of documents.

Note: Experiments are conducted in a controlled and enclosed environment with shielding up to 1.5metres thick. This shielding is designed to limit the maximum gamma dose outside the experimental area to 0.5mSv per year. This means that the remainder of the building is categorised as being suitable for general access, as is the area immediately outside the building adjacent the experimental area. The lasers will focus on a target chamber, a sealed vessel housing the tiny targets. The action of the lasers when fired at the target will generate a burst of intense ionising radiation, including gamma and fast neutrons. These bursts will occur over a very short duration, but require that the walls of the Target Hall be capable of acting as shield walls to ensure that as far as is possible, no radiation escapes outside of the Target Hall. For this reason the walls of the Target Hall will be 1.5 metre thick reinforced concrete.

Note: Electromagnetic Shielding

The Orion laser target area will be provided with an electrically shielded enclosure to control the emission of the electromagnetic transients generated by the laser target. This will ensure the environment in the remainder of the Orion building and immediately outside will meet the limits

given in BS EN 61000-6-3, Generic Standard - Emission Standard for Residential, Commercial and Light-Industrial Environments. Since electromagnetic radiation falls rapidly with distance (roughly inverse square law) then adherence to this standard will ensure there is no

environmental impact outside the AWE site. Compliance with BS EN 61000-6-3 is required within the Orion building to enable the use of low cost commercial/domestic equipment and ensure the safety of personnel. Compliance with BS EN 61000-6-3 will also ensure compliance with the European EMC Directive, Wireless Telegraphy Act and NRPB Restrictions on Exposure to Electromagnetic Fields.

Further control measures will be applied to prevent conducted EMP from being a problem both to the rest of the AWE site and to services external to AWE.

4.3 Noise

The facility will be designed so that the impact of any noise will be minimised to reduce the noise at the site boundary.

Ambient and specific noise level surveys have been undertaken in September 2001 and compared against WHO guidelines for nuisance and do not represent a pollution problem.

A Noise Survey is due to be carried out at AWE and the surrounding areas to investigate the impact of the new construction projects during both construction and normal operations. This section will be updated following the results of this survey.

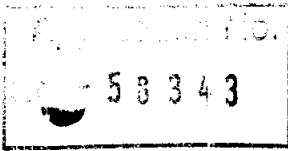
4.4 Traffic

The operational traffic for the facility is expected to be 40 staff per day (existing HELEN staff) plus visitors, a relatively minor increase in vehicles. The number of visitors will be a maximum of 12 per day for 60 days of the year. The main routes used will be the A340 through Aldermaston and Tadley. There will be an impact on the West Gate entrance due to the increase in staff using that gate for access to other facilities e.g. the new accommodation block as well as Orion. Congestion is likely to slightly increase in those areas if the traffic system remains as it is. Changes have been planned in the west end of site to minimise the effect of AWE traffic in the surrounding area by moving the entrance to the site, this will reduce the number of vehicles queuing onto public roads, it is also investigating schemes like car sharing. The Orion Facility is not expected to be commissioned until early 2008.

4.5 Surface / Groundwater

The foul and surface water drainage systems for the proposed site will be designed to ensure integrity and all effluent will be removed by piped systems. Water discharged into the surface water drainage system will pass into one of the surface water outfalls, where water is monitored by chemical analysis and released to local surface water courses under EA consent.

The construction of the proposed Facility should have no impact upon the direction of groundwater flow beneath the building. The Facility will require



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limited volumes of water for domestic and cleaning activities during operation, and therefore will not place additional demands upon the volume of groundwater abstracted by AWE (A) from the Chalk aquifer. In summary, the potential for radioactive or other contamination of the surface or groundwaters is negligible during routine operations.

Note: The building has 2 hot water boilers, fired with light fuel oil (class D). An oil storage tank of approximate capacity 30,000 - 50,000 litres will be installed near to the building in accordance with the Control of Pollution (Oil Storage) (England) Regulations 2001, and Environment Agency Pollution Prevention Guideline PPG2, "Above Ground Oil Storage Tanks". Compliance with these regulations and guidelines minimises the risk of spills and resultant pollution.

4.6 Air Quality

All toxic gaseous emissions will be subject to filtration using scrubbers, carbon filtration or High Efficiency Particulate Air (HEPA) filtration before discharge to the environment. These discharges will be assessed and the methodology documented including all assumptions. All discharges from the facility will remain within EA agreed limits for the AWE site.

Solvents will be used for cleaning purposes, in the majority of cleaning this will entail and impregnated cloth. Initially the 50 amps will require cleaning meaning 50 barrels will be used. The current standard on site for cleaning optics is one barrel of solvent each, this equates to 12 barrels (18lts per barrel) of HFE7100 per week all of which is released via the stack. The project management team is currently deciding between this option and the alternative of dryers, these use demineralised water to clean the optics. This change of cleaning method will entail a change of amplifier.

Note for clarification on the use of solvents.

On HELEN, amplifiers and mechanical components are cleaned using a solvent (HFE7100) in a high-pressure spray booth and ultrasonic tank. This cleaning facility reclaims a proportion of the solvent for reuse.

There are 2 circumstances under which Amplifiers and mechanical components require cleaning:

- Prior to initial assembly***
- When components require replacing***

The major consumption of HFE7100 occurs during initial assembly. Components are replaced infrequently (about every 5 years) so the day-to-day use of HFE7100 is not significant.

If the HELEN cleaning facility were used to clean all the new ORION amplifiers prior to initial assembly, it is estimated that 900 litres of HFE 7100 would be required. (50 Amplifiers x 1 barrel of solvent each x 18 litres solvent per barrel). Additional solvent would be required for cleaning mechanical components. Total consumption of HFE7100 for initial cleaning could be in the region of 1000 - 1500 litres.

The component replacement programme is likely to need about 1 barrel (18 litres) of HFE7100 every 2 –4 months.

HFE7100 is manufactured by 3M and replaces traditional ozone depleting solvents. It is non-ozone depleting, has low global warming potential (GWP) and is not a volatile organic compound (VOC). This grade has one of the lowest toxicological profiles of the new CFC replacement materials. Nevertheless, in the detail design phase, the project team will use Best Practicable Means (BPM) studies to substantiate the cleaning facility design.

Alternatives, which could be considered, include:

- Improved solvent recovery***
Use of a water-based system (uses a solution of demineralised water and surfactants)

4.7 Visual Impact

The building will be built to modern standards and be in keeping with surrounding developments. The overall building envelope will be within the following approximate dimensions: 100m long x 40m wide by 22m high. The facility is not considered to have an adverse effect in terms of visual impact.

Note: See comments under section 2.1

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4.8 Energy Usage

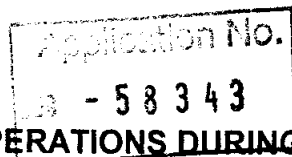
The following will be developed to reduce energy usage in non-experimental areas:

- Water saving devices (re-use of 'grey' water in domestic facilities)
- High insulated building
- Heat transfer
- Energy efficient lighting (presence and daylight detection) in office and toilet areas
- High efficiency boilers

Note: The following schemes can reduce water consumption:

- *Rainwater recycling for toilet and urinal flushing*
- *Use of percussion spray taps with auto shut off on wash basins*
- *Showers with flow rates between 9 & 6 litres/min*
- *WC's with 6.0 litre flush*
- *Proximity infra red controls for urinal flushing*
- *Use of grey water for coarse cleaning of external parts*

These schemes will be further considered during the detail design phase to assess their viability by considering quantities, usage, capital costs and costs in use.



5 OPERATIONS DURING ACCIDENT CONDITIONS

The guidance for the Environmental Assessment process (Refs. 3,4 and 5) indicates that the potential environmental impacts associated with accident or emergency conditions are not for consideration within a document such as this. However, AWE has in place emergency procedures designed to respond to incidents, as required by Site Licence Condition 11, Emergency Arrangements. A Safety Case will be produced which identifies the hazards and quantifies risk within the facility and the mechanisms to be put in place to control accident conditions. The emergency response plans deal with the specific or generic hazards identified within the safety case and how the impacts can be minimised.

AWE Aldermaston is a Control of Major Accident Hazards (COMAH) site and is regulated under this by the EA /HSE. The company has its own Major Accident Prevention Policy (MAPP) [Ref.AWE/DSDG/A/PS/AD/007] and all facilities are required to keep inventories of chemical holdings and identify potential Major Accidents to the Environment (MATTE). All MATTE scenarios will have a contingency plan as part of their FERP.

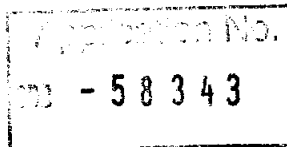
ENVIRONMENTAL SETTING

6.1 General

The AWE (Aldermaston) site is located on the border between Hampshire and Berkshire, approximately 10 miles south east of Newbury and 11 miles south west of Reading. The Aldermaston site covers an area of approximately 250 hectares and is located on an upland plateau, at an elevation of about 100 metres above Ordnance Datum. The AWE site is generally level, with little natural relief. The AWE site lies to the south of the valley of the River Kennet, between Brimpton in the west and Burghfield Common to the northeast.

The AWE site is roughly triangular in shape. A dense network of roads, buildings and paved areas covers the central and much of the western part of the site. The eastern half of the site is more open, with wooded and grassed areas. An open area of playing fields is present on the western section of the site.

Land use in the surrounding area is predominantly rural, with the exception of the small village of Aldermaston to the northwest and the larger conurbations of Heath End and Tadley to the south. The remainder of the immediately surrounding area consists of deciduous and coniferous woodland. Wasing Wood and Paices Wood are located to the west, Benyon's Enclosure to the east and Aldermaston Court to the north. To the west of the site, adjacent to Wasing Wood, is located an area of historic gravel extraction which is currently utilised as a public waste amenity site (garden waste only). Young's Industrial estate is located upon part of the former area of gravel extraction. This comprises light industrial premises and plant associated with the former gravel extraction activities.



6.2 Geology

Information about the geology beneath the AWE site has been obtained from the British Geological Survey 1:50,000 map for the area, and from numerous intrusive investigations that have been undertaken across the site by the company. The geological sequence (from the surface) is described below;

- Made ground is present on parts of the site, generally consisting of re-located natural materials of orange - brown, silty, sandy clay and silty sand with gravel - size fragments of flint, brick, tile and concrete. Where present the made ground is often less than 3m in thickness.
- The Plateau Gravels consist of coarse grained gravels, which vary in thickness from about 1m in the north west of the AWE site to between 3 and 4 m in the east, with deposits of up to 6m in certain areas. The base of the Plateau Gravels is undulating in nature.
- The Bagshot Beds consist of sands, silts and silty sands to silty clays. They are variable in depth across the site, due to their fluvial nature, and in a number of areas comprise a thin upper clay unit, underlain by a sand unit, underlain by a lower, thicker clay unit. They are approximately 15m to 18m in thickness.
- The uppermost beds of the London Clay comprise alternations of fine sand and silty clay which pass down into a compact blue grey clay. These uppermost beds of the London Clay are often difficult to distinguish from the overlying Bagshot Beds; however, at two locations on AWE site a siltstone gravel layer has been proven between the Bagshot Beds and the London Clay. The London Clay has been shown to be between 80 and 90m in thickness within the AWE site water supply boreholes.
- The Reading Beds, formed of mottled grey green silty clays and sands, underlay the London Clay, and are about 10m in thickness.
- The Upper Chalk is a very fine grained, consolidated, but relatively soft, white pure limestone containing vertical fissures and horizontal bedding planes and containing nodules and tabular layers of flint.

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6.3 Hydrogeology

6.3.1 Regional

The Chalk is a major aquifer of national importance, with significant groundwater abstractions via boreholes by Water Utilities, Water Supply Companies, industry and private individuals within the Berkshire / Wiltshire area and eastwards towards London. In addition to groundwater supplies the Chalk provides spring sources and baseflow to streams from the Marlborough, Berkshire and North Hampshire Downs and Chiltern Hills which feed the Thames and maintain water abstractions in the London area.

The Plateau Gravels and the Bagshot Beds form shallow aquifers (such as that beneath the AWE site), which may be locally extensive. Domestic and agricultural abstractions from the shallow aquifers have declined in number and a few remain, mainly for agricultural purposes. There are no public supplies drawn from these beds within the Berkshire / Wiltshire area.

6.3.2 Local

Two minor aquifers, contained within the Plateau Gravels and the Bagshot Beds, and one major aquifer, the Chalk, are present beneath the site. The Groundwater Vulnerability Map for the Upper Thames and Berkshire Downs (Ref. 8) indicates that the Plateau Gravels are highly vulnerable to contamination where present at the surface, whilst the Bagshot Beds are of intermediate vulnerability where they outcrop. The London Clay is of hydrogeological significance, as it confines the underlying Chalk and also reduces its vulnerability to contamination, as the London Clay is generally an aquiclude, preventing the migration of contaminated groundwater from the surface. The Chalk is the most permeable of the deposits and is used as a major water supply source.

Hydrogeological studies undertaken within the AWE site indicate that groundwater tables are present within both the Plateau Gravels and the Bagshot Beds. The elevations of the respective water tables vary seasonally, with a range of approximately 0.5m to 1m. It is considered that groundwater within the Plateau Gravels flows radially beneath the AWE site from a 'high point' near the southwestern corner of the site. The groundwater within the Chalk is considered to flow generally towards the east, but may be influenced locally by the abstraction of groundwater by AWE (A).

Groundwaters within the Plateau Gravels flow radially from beneath the site, and are discharged either at springs located at the junction of the Plateau Gravels and the Bagshot Beds, or as baseflow into surface waters and streams. In a similar fashion, groundwaters within the Bagshot Beds will either discharge at springs that form at the junction of the Bagshot Beds and the London Clay, or will form baseflow into surface waters and streams. The greater hydraulic conductivity of the Plateau Gravels means that the majority of the recharge to the AWE site in the form of precipitation will remain within the Plateau Gravels, with approximately 2% recharge of groundwater from the Plateau Gravels into the underlying Bagshot Beds.

6.3.3 Groundwater Quality

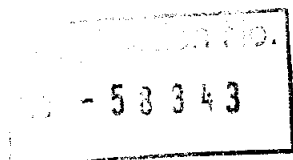
The quality of the groundwater in the Chalk of the western end of the London Basin (in particular the area between Lambourne and Basingstoke) has been the subject of detailed investigation by the British Geological Survey (Ref 9). The survey shows the Chalk groundwater to be of good quality but with local evidence of contamination.

6.3.4 Groundwater Abstractions

There is a large public supply borehole within 4km of AWE (A);

- Thames Water Utilities abstract groundwater from the Chalk 3km north west of the AWE site at Ufton Bridge.

Groundwater abstractions require licensing by the Environment Agency if the abstraction exceeds $50 \text{ m}^3 \text{ yr}^{-1}$. Abstractions of a lesser volume are recorded by the Local Council's Environmental Health Department. There are six licenced groundwater abstractions located within a 3km radius of the site. These are listed within Appendix 1. There are nine private, unlicensed

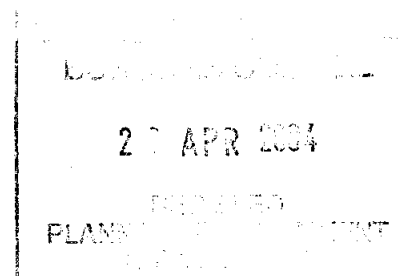


groundwater abstractions located within a 3km radius of the site. These are listed within Appendix 2.

6.4 Hydrology

The Environment Agency lists eight surface watercourses within 3km of the centre of the AWE site. Of these four are classified under the Environment Agency's (EA) General Quality Assessment (GQA) Scheme. The GQA scheme was introduced in order to quantify surface water quality and to identify water quality trends over time. The scheme classifies the surface waters with regard to biological oxygen demand (BOD) dissolved oxygen and total ammonia, with there being six categories. These are A - very good (water suitable for any abstraction and very good salmonid and cyprinid fisheries), B - Good, C - fairly good (potable supply after advanced treatment and a natural ecosystem, D - fair, E - poor, F - bad (very polluted river which may cause nuisance and severely restricted ecosystem). The eight watercourses are listed below:

- Fishermans Brook
- Aldermaston Stream
- River Enborne
- Wasing Stream
- Westend Brook
- Padworth Stream
- Silchester Brook
- Church Brook



Appendix 3 contains the classifications of the four of these local surface waters which are recognised within the GQA scheme. The Environment Agency has indicated that there are five surface water abstractions within 3km of the proposed location. These are listed within Appendix 4.

6.5 Sites of Nature Importance

Information has been obtained regarding the location of sites of nature importance within 3km of the proposed location. This has indicated that there are two sites of nature significance within 1km of the proposed location See figure 1. Within 3km of the proposed location are 9 statutory Sites of Special Scientific Interest, 1 Local Nature Reserve and 1 National Nature Reserve. Information on the SSSIs has been provided by English Nature, and the SSSIs are listed within Appendix 5. An indication of the reason for the SSSI notification is included.

6.6 Location of Landfill Sites

Seven landfill sites have been identified within 1km of the proposed location. None of these landfills have valid operating licences, indicating that the licences have either been surrendered, returned, expired, lapsed or revoked, or the landfill was operated prior to the requirement for licensing under the Control of Pollution Act, 1974. Six of these landfills were

associated with the large gravel works located 500m southwest of the proposed location. The landfills are listed within Appendix 6. geotechnical information.

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6.7 Summary of Environmental Setting

The proposed location of the Facility is within a developed area of the AWE site. The area presented in Figure 1 will be almost completely surrounded by existing AWE buildings and facilities. The surrounding land comprises woodland and agricultural land, with local populations within the village of Aldermaston to the northeast and Tadley to the south.

The immediate area surrounding the proposed location of the Facility is not considered environmentally sensitive, due to the heavily industrialised nature of the AWE site. However, the general area surrounding the AWE site is considered sensitive, due to its rural nature with good quality groundwaters, surface waters and sites of nature conservation significance.

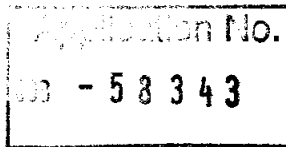
It is considered that the sensitive environment in the area surrounding the AWE site will not be impacted upon by the construction or operation of the proposed Facility.

7 CONCLUSION

The Assessment demonstrates that the operations to be undertaken within the proposed Facility do not represent a significant environmental impact. The construction, operation and eventual decommissioning will be carried out in accordance with the AWE SMS and EMS which will ensure adequate controls are in place to manage safety and environmental impact. The factors outlined below are considered important in displaying the low environmental impact of the proposed facility:

- *Construction activities will cause limited increases in traffic volumes over the construction period, and noise effects will be minimal during construction.*
- *During normal operations environmental impacts are insignificant with respect to site totals and the new facility will present an improvement over the existing arrangements.*
- *The visual impact of the facility will be minimised, and there will be no significant increase in noise levels background levels within the area.*
- *The facility will be built to harmonise with other local developments.*

The potential for release of material into the environment and consequent contamination is extremely low, given the systems and procedures in place. The construction and normal operations of the proposed Facility are therefore considered to have the potential for minimal environmental impact. The construction of the proposed replacement LASER facility will improve the overall environmental impact of the AWE Aldermaston site.



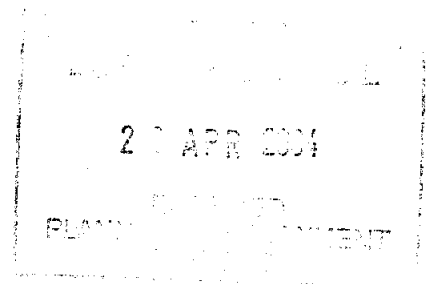
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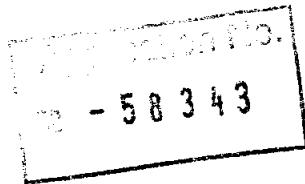
Version: Issue 02

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References

- 1 Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.
- 2 Environmental Assessment- A Guide to the Procedures. Department of the Environment, HMSO 1989
- 3 Preparation of Environmental Assessments for Planning Projects that Require Environmental Assessment - A Good Practice Guide. Department of the Environment, 1995.
- 4 Department of the Environment Circular 02/99 'Environmental Impact Assessment'
- 5 AWE Company Procedure for Compliance with Planning Consent AWE/DSDG/B/EGN/SAG/001.
- 6 Conceptual Study Atkins ref. BS3245/PD1 Rev 1 Nov 01
- 7 Initial Statement of Brief Atkins Reference DEE/D.001/333. 073





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Appendix 1: Licensed Groundwater Abstractions within 3km of AWE (A)

- Mrs J Rayner is licensed to abstract $1,659 \text{ m}^3\text{yr}^{-1}$ from the Bagshot Beds for agricultural purposes at Pamber Heath, 800m south east of the proposed location.
- W Owen is licensed to abstract $1,659 \text{ m}^3\text{yr}^{-1}$ from River Gravels for agricultural purposes at Fronds Farm, Aldermaston, 2km north of the proposed location.
- The Old Mill Hotel is licensed to abstract $909 \text{ m}^3\text{yr}^{-1}$ from the Chalk 2km north of the proposed location.
- The Environment Agency is licensed to abstract $55,000 \text{ m}^3\text{d}^{-1}$ from the Chalk for flow augmentation 900m south east of the proposed location.
- Blue Circle plc are licensed to abstract $22,457 \text{ m}^3\text{yr}^{-1}$ from the chalk for university spray irrigation 500m north of the proposed location.
- Padworth Trout Farm Ltd is licensed to abstract $935,859 \text{ m}^3\text{yr}^{-1}$ from the River Gravel for fish farming 1.75km north east of the proposed location.

Appendix 2: Unlicensed groundwater abstractions within 3km of AWE (A).

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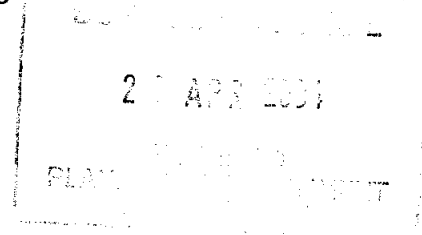
- Groundwater is abstracted from the River Gravels at Padworth Mill, 2.5km north east of the proposed location for domestic use.
- Groundwater is abstracted from the River Gravels 2km north of the proposed location at Aldermaston Bridge for domestic use.
- Groundwater is abstracted from the River Gravels 2km north of the proposed location at Aldermaston Bridge for domestic use (at the same point as above).
- Groundwater is abstracted from the River Gravels on Mill Lane, Padworth, 2.5km north east of the proposed location for domestic use.
- Three groundwater abstractions are located within Baughurst, approximately 3km south west of the proposed location.
- Two groundwater abstractions are located within Silchester, approximately 3km south east of the proposed location.

Appendix 3: General Quality Assessment of watercourses

Watercourse	Stretch	GQA Classification		
		1988-1990	1992-1994	1993-1995
River Enborne	West Woodhay - Bishops Green STW	B	B	A
River Enborne	Bishops Green STW - Baughurst Bk.	B	A	A
River Enborne	Baughurst Brook - Kennet	B	B	B
Fishermans Brook	Source - Padworth Stream	<D	D	C
Padworth Stream	Old Warren - Kennet	A	B	B
Silchester Brook	Tadley - Silchester STW	B	B	A
Silchester Brook	Silchester STW - Foundry Brook	C	C	B

Appendix 4: Surface Water Abstractions Within 3km of AWE (A).

- Wasing Farm are licensed to abstract $9,092 \text{ m}^3\text{yr}^{-1}$ from a lake and the River Enborne for agricultural spray irrigation, located 1.5 km west of the proposed location.
- $2.3 \text{ m}^3\text{yr}^{-1}$ is abstracted from unnamed inland water within Tadley, 2.2 km south of the proposed location for non-agricultural lake filling.
- Fosters Farm is licensed to abstract $22,730 \text{ m}^3\text{yr}^{-1}$ from unnamed inland water 1km north west of the proposed location for lake filling.
- Mill Lane, Padworth, is licensed to abstract $39,528,000 \text{ m}^3\text{yr}^{-1}$ from the River Kennet 2km north east of the proposed location for fish farming.
- $5,800 \text{ m}^3\text{yr}^{-1}$ is abstracted from unnamed inland water within Paices Wood, 600m west of the proposed location, for spray irrigation.



Appendix 5: Sites of Special Scientific Interest Within 3km of AWE (A).

- Brimpton Pit, located 3km west north west of the site, is a working gravel pit of very considerable importance to geologists because of evidence which it provides for environmental change during the Ice Age, the warm phase named the 'Brimpton Interstadial'. It is also a key site in elucidating the history of the development of the River Thames.
- Woolhampton Reed Bed, 3km north west of the site, consists of dense reed bed with smaller areas of tall fen vegetation and carr woodland, is notable for its nesting bird population and diverse insect population. The site supports a large colony of reed warblers and over 300 species of moth, many of which are rare or uncommon, and 160 species of flies.
- Aldermaston Gravel Pits, 3km north of the site, consists of mature flooded gravel workings surrounded by dense fringing vegetation, trees and scrub, affording a variety of habitats for breeding birds and a refuge for wildfowl. The surrounding marsh and scrub are important for numerous birds including 9 breeding species of warbler, water rails, kingfishers and an important breeding colony of nightingales.
- Decoy Pit, Pools and Woods, located adjacent to the east of the site, comprises a mosaic of habitats including woodland, heathland, grassland and small waterbodies. The special interest of the site is twofold, firstly it supports the greatest number of breeding dragonfly and damselfly species in Berkshire, and secondly it includes alder woodland types which are nationally uncommon and a declining habitat. 23 species of dragonfly and damselfly breed within the site, including three nationally scarce species. Other nationally uncommon species include the woodlark, the silver-studded blue butterfly and the Devon carpet moth
- Wasing Wood Ponds, 800m south west of the site, includes a group of ponds, wet ditches and marshy areas partly in Wasing Wood and partly on open ground formerly excavated for gravel. The site is especially important for dragonflies, some of the species being very uncommon.
- West's Meadow, Aldermaston, 300m south of the site, comprises two small fields of pasture bounded by hedgerows and a small stream. The meadows consist of neutral to acidic herb-rich grassland including both well-drained areas and wetter areas of base-poor marsh. The meadow contains over 80 species of grassland plant, which is a high figure for this type of rare and rapidly declining unimproved meadow.
- Ron Ward's Meadow and Tadley Pastures, 3.5km south of the site, comprises a main meadow of unimproved, herb-rich grassland, managed traditionally as a hay meadow. There are 28 species indicative of ancient grassland present, of which a number are uncommon, making it one of the finest surviving hay meadow / pasture complexes in Hampshire.
- Pamber Forest and Silchester Common, 2km south east of the site, consist of extensive ancient oakwood, two heathland commons and a series of unimproved wet meadows. This association of ancient woodland, heath and grassland supports a diverse range of plants and animals, including many nationally rare species and three species of bird

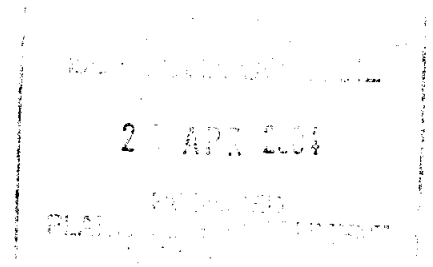
listed in Annex 1 of the EC Directive on Conservation of Wild Birds, the woodlark, nightjar and Dartford warbler.

- Ashfold Hill Woods and Meadow, located 3.5km southeast of the proposed location, comprises an extensive and varied complex of woodlands and agriculturally unimproved meadows. The site is remarkable in its habitat quality, diversity of communities and number of rare and threatened species, and is without comparison in central southern England. The meadow supports 31 species of butterfly and over 400 species of moth.

Appendix 6: Locations of Landfills Within 3km of the Proposed Location

- Budd's Plantation, 1.2km south east of the proposed location, accepted construction and demolition wastes and excavated natural materials.
- Paices Hill, 920m north west of the proposed location, contained controlled wastes, excavated natural materials, hardcore and rubble.
- Young's Development (3), 940m south east of the proposed location, accepted excavated natural materials and inert builders / demolition waste.
- Paices Hill, 800m north west of the proposed location, accepted excavated natural materials and inert builders / demolition waste.
- Young's Development (2), 1km west of the proposed location, contained construction and demolition wastes, excavated natural materials, soil and high-density/hard/bonded/cement asbestos.
- Silt Ponds, Paices Hill, 750m west of the proposed location, accepted Berkshire Type A non-decomposing waste and small volumes of hard asbestos.

Court Farm, Aldermaston, 1.4km north east of the proposed location, accepted excavated natural materials, inert builders/demolition waste, paper/cardboard waste, plasterboard and wood.



Appendix 7: Construction Phase PREA

Corporate Significant ce	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Releases To Air						
High	To Air - Radioactive Materials	N	N/A	No radioactive materials will be used during the construction phase. Some legacy radioactive material may be in the ground that will be remediated under controlled conditions prior to construction.	Any legacy material present in the ground will be remediated under controlled conditions using containment systems. There will be no aerial discharges.	
Medium	To Air - Ozone Depleting Substances	N	N/A	ODS material may be present in some of the refrigerators used by construction personnel. However these will be sealed and will not present a risk under normal conditions.		
Medium	To Air - Greenhouse Gases	Y	NS	Portable generators will contribute to this aspect, as will road vehicles. Compared to the site total this is not considered to be a significant contribution.		
Low	To Air - PPC Main Polluting Substances beryllium	N	N/A	beryllium is not used or discharged during the construction phase.		

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Corporate Significance	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Air - PPC Main Polluting Substances Acids	N	N/A	Acids are not used or discharged during the construction phase.		
Low	To Air - PPC Main Polluting Substances Lead	N	N/A	Lead is not used or discharged during the construction phase.		
Low	To Air - Volatile Organic Compounds	Y	NS	Solvent-based paint may be used for decorating purposes. The contribution is not considered to be significant. There may be some solvent contamination present in the ground which could be released during construction.	Appropriate PPE will be used to protect operatives. Site survey is being undertaken to determine the presence of solvent contamination.	Work will be carried out by trained operatives under a safe system of work.
Releases to Water						
High	To Water - Radioactive Material	N	N/A	Radioactive effluent will not be routinely discharged during the construction phase. Any legacy material in the ground may result in contaminated groundwater that may have to be pumped out and discharged during excavation operations.	Precautions as defined in the BPM study and safety documentation will be followed to minimise radioactive effluent discharges.	Contaminated groundwater will be discharged in accordance with the Radioactive Substances Act 1993 according to a BPM study.

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Corporate Significance	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
High	To Water – Engineered Surface Water e.g surface water drains	N	N/A			
High	To Water – Unengineered Surface Water	N	N/A			
Medium	To Water – Trade Effluent	Y	NS	A small quantity of trade effluent may be generated during the construction phase. This is likely to arise from trenching operations and excavations that expose legacy solvent contamination in the ground. Groundwater will be pumped into bowers, sampled and discharged via Trade Waste. Any rainwater that fills the excavations will have to be pumped and disposed of as Trade Effluent. The contribution is not considered to be significant.	A site survey specifically for the Orion project has been completed no contamination was found.	A waste service agreement will be prepared and approved to allow for the collection and disposal of trade effluent.

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Corporate Significance	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Water - Domestic Effluent	Y	NS	Domestic effluent will be generated by the construction team throughout the duration of the project. Based on a team of 100 using approximately 50 litres a day for 18 months gives a contribution of 1875000 litres. This is less than 10% of the site contribution and is therefore not considered to be significant.		The Head of Construction will provide recommendations for minimising water use.
Releases to Waste						
High	To waste - Radioactive Waste	Y	N/S	Radioactive waste will not be generated as part of the routine construction phase. However any legacy contamination in the ground will have to be remediated and may generate some radioactive waste.		Safe Systems of Work will be followed. A BPM study in accordance with the Radioactive Substances Act 1993 will ensure discharges are kept to a minimum should any contamination be found.

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Corporate Significant ce	ASPECT	Contribu tion Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Waste -- Toxic Waste <i>Note: Should read "To Waste -- hazardous (including toxic) waste"</i>	Y	NS	<p>Toxic waste is not expected to be generated during routine construction phase work. Any legacy solvent present in the ground that is disturbed during excavation work will have to be disposed of as Toxic Waste.</p> <p><i>Note: Solvents from groundwater will be disposed of via trade effluent. Any soils which are contaminated with solvents will need to be disposed of as hazardous solid waste through the company system.</i></p> <p>Empty paint tins, oil residues and some construction waste may be toxic waste. The overall contribution is not considered to be significant.</p>		<p>Safe Systems of Work will be followed.</p> <p>A waste service agreement will have to be prepared and approved to allow waste to be disposed of via waste management group using the form 43 system. This type of waste will be classified as special waste in accordance with the 1996 regulations. A 3 day notice period to the Environment Agency is required for transfers of Special Waste.</p>

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Corporate Significance	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Waste - Domestic Waste	Y	NS	Domestic waste including rubble, waste building material, food wrappings, empty drink containers and paper will be generated during construction of the new facility. The contribution is not considered to be significant compared with the rest of the site.		The site has a policy of re-use and recycling where possible. Blue bins will be made available for re-cycling paper waste. Onyx run a yard for the collection of wood and metal assets.
Resource Use						
High	Resource Use - Special Nuclear Material use and storage.	N	N/A	SNM will not be used or stored during the construction phase of the project.		
Medium	Resource Use - Oil Chemical and Storage and Use	Y	NS	Various paints, chemicals and oils will be used during the construction phase. Diesel and petrol fuel may be used to power generators for various power tools. The contribution is not considered to be significant.	All oil and fuels will be stored in fully bunded enclosures. Spill kits and contingency plans in the event of leakages will be prepared.	

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Corporate Significant ce	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Medium	Resource Use -Water on site	Y	NS	The construction staff will use water from the on-site boreholes. The contribution is estimated at 1875000 litres in total for the period of construction. This is less than 5% of the site annual total and not considered to be significant.		The Head of Construction will provide recommendations for minimising water use.
Low	Resource Use -Water off site	N	N/A	Off-site water supplies will not be required		
Low	Resource Use - Other	N	N/A			

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Corporate Significant	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Resource Use - Electricity and Gas	Y	NS	Some temporary electrical installations will be required to power portakabins and temporary accommodation for construction workers. Over the 18-month construction period the contribution is not considered to be significant compared with the site total contribution of 4 E8 kWh.		General awareness campaign and environmental training as part of the site induction process.
Land Quality						
High	Land quality - Radioactive	N	N/A	Land quality is a corporate issue. Any legacy contamination may have to be remediated prior to commencement of construction activities	EDGE Consultants carried out a project specific investigation, no major contamination was found. It will be dealt with as part of Awe's site wide Land Quality program.	
High	Land Quality - Solvents	N	N/A	Land quality is a corporate issue. Any legacy contamination may have to be remediated prior to commencement of construction activities	EDGE Consultants carried out a project specific investigation, no major contamination was found. It will be dealt with as part of Awe's site wide Land Quality program.	
Medium	Land Quality - Metals	N	N/A	Land quality is a corporate issue. Any legacy contamination may have to be remediated prior to commencement of construction activities	EDGE Consultants carried out a project specific investigation, no major contamination was found. It will be dealt with as part of Awe's site wide Land Quality program.	
Nuisance						

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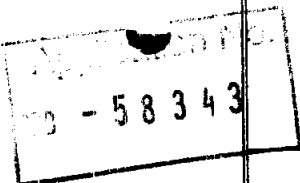
Corporate Significance	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Nuisance - Odour	Y	NS	Some odours from construction are inevitable although this is not expected to cause any nuisance.		
Low	Nuisance - Noise	Y	NS	Some noise during construction activities is expected. The contribution compared with the rest of site is considered to be significant, as the noise will not be attenuated by a building fabric, except where those affected are in surrounding buildings. The excavations required for the facility are expected to be significant.		Normal working hours of 8am - 5pm will be used. Noise surveys will be periodically carried out.
Low	Nuisance - Light	Y	NS	Some lighting will be required for construction work that is carried out in winter months or during silent hours. The contribution is not considered to be significant.	Two main types of lighting will be used floodlighting and festoon lighting.	Normal working hours will be used where possible.

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Corporate Significant ce	ASPECT	Contribu tion. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Nuisance - Visual Impact	Y	NS	The building when complete will be approximately 100m long x 40 m wide and 25 m high. Although this is a large structure and on the Aldermaston site fence it will be commensurate with the nearby conference centre and not present a significant visual impact.		The final building will be finished to modern standards in keeping with the surrounding site.
				<i>See paragraph 2.1 for comments on building size.</i>		The development's plans will be subject to scrutiny by the MoD and the Local Authority as appropriate as part of a Notification Of Planning Development (NOPD).
Medium	Nuisance - Congestion	Y	S	Construction traffic is expected to be on site for a period of 18 months. Several lorries per day and heavy machinery will be required to carry out excavations and transfer spoil round the site. The additional traffic is considered to be significant.		A control plan for the movement of vehicles will be developed with the Head of Construction.
Ecology						
Medium	Ecology - Species	Y	NS	Construction work will disrupt species local to the area of the proposed development. All nesting birds are protected so care should be taken when removing the tree that is on the site. Advice should be sought from the Green Line (5753).		An ecology survey will be carried out prior to work commencing. Contact the green line on Extn 5753 for advice about species.



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Corporate Significance	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Medium	Ecology - Habitats	Y	NS	Construction work will disrupt any habitats local to the area of the proposed development. Advice should be sought from the Green Line (5753).		An ecology survey will be carried out prior to work commencing. Contact the green line on Extn 5753 for advice about species.
Medium	Ecology - Heritage	N	N/A	There is only one known heritage site at Aldermaston - Grimms bank. This site is some distance from the proposed location of the new laser facility.		

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Appendix 8: Operational Phase PREA

Corporate Significant	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Releases To Air						
High	To Air - Radioactive Materials	Y	S	Some laser experiments will involve radioactive materials. Any contribution to this aspect is automatically considered to be significant. Note See text box with paragraph 2.2.2 Some laser experiments will involve tiny amounts of radioactive materials. However any potential impact of radioactive materials is automatically considered to be significant.	All discharges will be filtered using stages of High Efficiency Particulate Air (HEPA) filtration.	A BPM study will be required to demonstrate that waste discharged is minimised to comply with the RSA 1993.
Medium	To Air - Ozone Depleting Substances	Y	NS	ODS material may be present in some of the chillers used for temperature and humidity control in the building. The contribution, released during maintenance and losses is not considered to be significant.	New equipment used in the building will be to modern standards and use less harmful refrigerant gases than those used in older systems.	The design specification will need to specify ozone friendly materials.

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Corporate Significance	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Medium	To Air - Greenhouse Gases	N	N/A	The facility will not make any direct discharges of greenhouse gases. <i>Note: The facility will now incorporate light fuel oil fired hot water boilers. Boilers will be designed, maintained and controlled in accordance with current requirements to minimise discharge of greenhouse gases. Design capacity is 500-600kW</i>		
Low	To Air - PPC Main Polluting beryllium	Y	NS	A small quantity of beryllium will be discharged in some of the laser experiments. The contribution is not considered to be significant. <i>Note: See text box for paragraph 2.2.1</i>	HEPA filtration will minimise discharges.	
Low	To Air - PPC Main Polluting Acids	N	N/A	Acids are not used or discharged during routine operations.		

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Corporate Significance	ASPECT	Contribution, Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Air – PPC Main Polluting Substances Lead	N	N/A	Lead is not used or discharged during the operational phase.		
Low	To Air – Volatile Organic Compounds	Y	N/S	<p>Solvents are not used in quantities that will result in aerial discharge. Some minor discharge may result from the use of solvents for cleaning applications but this is considered to be trivial.</p> <p>The optical cleaning methodology is currently being reviewed, however if solvents are used this will entail a higher contribution. When compared to the site contribution to this aspect this is considered to be non-significant.</p> <p><i>Note: See comments at paragraph 4.6. The solvents used for cleaning amplifiers are not Volatile Organic Compounds (VOC)</i></p>		Work will be carried out by trained operatives under a safe system of work.

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Corporate Significant	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Releases to Water						
High	To Water -- Radiactive Material	N	N/A	Radioactive effluent will not be generated on routine basis.		
High	To Water -- Engineered Surface Water e.g surface water drains	N	N/A	This aspect is concerned with the operation of the surface drainage network and is not applicable to the Orion project.		
High	To Water -- Unengineered Surface Water	N	N/A	This aspect is concerned with the operation of the various consented discharge points and is not applicable to the Orion project.		
Medium	To Water -- Trade Effluent	Y	NS	The facility will be connected to the trade effluent drainage system. At this stage of the project the quantities are not known but not anticipated to be significant.		A waste service agreement will be prepared and approved to allow for the collection and disposal of trade effluent.

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Corporate Significant ce	ASPECT	Contribu tion. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Water - Domestic Effluent	Y	NS	<p>Domestic effluent will be generated by the operational staff.</p> <p>Based on an average team of 40 using approximately 50 litres a day gives an annual contribution of 500000 litres. This is less than 10% of the site contribution and is therefore not considered to be significant.</p> <p><i>Last sentence should read "This is less than 5% of the site contribution..."</i></p>		<p>The facility will reuse 'grey' water in the domestic facilities, reducing the amount of water required from the on-site borehole.</p> <p><i>See comments under paragraph 4.8 concerning water saving schemes.</i></p>

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Corporate Significant ce	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Releases to Waste						
High	To waste – Radioactive Waste	Y	S	<p>Radioactive waste, both ILW and LLW will be generated on a routine basis.</p> <p>Any contribution to this aspect is automatically significant.</p> <p><i>Small amounts of radioactive waste, LLW will be generated on a routine basis. No ILW will be produced.</i></p> <p><i>However any potential impact of radioactive materials is automatically considered to be significant.</i></p>		<p>Safe Systems of Work will be followed. A waste service agreement and quality control plan will be produced.</p> <p>A BPM study in accordance with the Radioactive Substances Act 1993 will ensure discharges of waste are kept to a minimum.</p>
Low	To Waste – Toxic Waste	Y	N/S	beryllium and lead waste will be generated along with waste oil and solvent. The quantities generated are not known at this stage but are not anticipated to be significant.		<p>Safe Systems of Work will be followed.</p> <p>A waste service agreement will have to be prepared and approved to allow waste to be disposed of via waste management group using the form 43 system.</p>

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Corporate Significance	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Waste – Domestic Waste <i>Note: Should read "To Waste – hazardous (including toxic) waste"</i>	Y	N/S	Domestic waste including, food wrappings, empty drink containers, cardboard and paper will be generated during routine operations in the facility. Based on a staff compliment of 40 people this is not considered to be significant.		The site has a policy of re-use and recycling where possible. Blue bins will be made available for recycling paper waste and other recycling e.g. cans. AWE Assets run a yard for the collection of wood and metal assets.
Resource Use						
High	Resource Use – Special Nuclear Material use and storage.	N	N/A	SNM will not be used or stored during the operation of the facility.		
Medium	Resource Use – Chemical and Oil Storage and Use	Y	N/S	Various paints, chemicals and oils will be used during the routine operations of the facility. The contribution is not considered to be significant.	All oil and fuels will be stored in fully bunded enclosures. Spill kits and contingency plans in the event of leakages will be prepared.	
					See comment under paragraph 4.5 - Fuel Oil Storage for Boilers	

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Corporate Significance	ASPECT	Contribution. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Medium	Resource Use -Water on site	Y	N/S	Water from the on-site boreholes will be used by the facility. The contribution is estimated at 500000 litres. This is less than 5% of the site annual total and not considered to be significant.	Fit Hippo cistern water savers	The facility should be fitted with Hippo, cistern water savers.
Low	Resource Use -Water off site	N	N/A	Off-site water supplies will not be required		
Low	Resource Use - Other	Y	N/A	<p>The building will be connected to the site steam supply and make use of consumable resources including paper.</p> <p>Comment: The building has its own boilers and it is therefore unlikely that it will be connected to the site steam supply.</p>	The building will be constructed to modern standards and be thermally efficient.	

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Corporate Significant ce	ASPECT	Contribu tion. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Resource Use - Electricity and Gas	Y	N/S	<p>The building will be connected to electrical supplies. The actual consumption is unknown but expected at this stage not to be significant. The gas use of the facility has been estimated at 1100kwh maximum. This is significantly less than 5% of the site total, therefore the contribution to this aspect is not significant.</p> <p><i>Note: The building will not now use gas but will instead use light fuel oil. Resource usage of oil will be similar to gas.</i></p> <p><i>Electricity usage is expected to be less than 1% of total site usage.</i></p>	The facility should be equipped with electricity metering.	General awareness campaign and environmental training as part of the site induction process.
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-bottom: 10px;"> 503343 </div> <div style="border: 1px solid black; padding: 5px;"> Land Quality </div>						
High	Land quality - Radioactive	N	N/A	Land quality is a corporate issue.		

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Corporate Significance	ASPECT	Contribution Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
High	Land Quality - Solvents	N	N/A	Land quality is a corporate issue.		
Medium	Land Quality - Metals	N	N/A	Land quality is a corporate issue.		
Nuisance						
Low	Nuisance - Odour	N	N/A	Odour is not considered to be an issue.		
Low	Nuisance - Noise	N	N/A	Noise is not considered to be an issue.		
Low	Nuisance - Light	N	N/A	Light pollution is not considered to be an issue.		

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Corporate Significance	ASPECT	Contribution: Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Nuisance - Visual Impact	Y	N/S	<p>The building when complete will be approximately 100m long x 40 m wide and 25 m high. Although this is a large structure and on the Aldermaston site fence it will be commensurate with the nearby conference centre and not present a significant visual impact.</p> <p><i>See paragraph 2.1 for comments about building size.</i></p>		<p>The final building will be finished to modern standards in keeping with the surrounding site.</p> <p>The development's plans will be subject to scrutiny by the MoD and the Local Authority as appropriate as part of a Notification Of Planning Development (NOPD).</p>
Medium	Nuisance - Congestion	Y	N/S	<p>A total of 40 staff will be employed to operate the new facility and most of these will be existing AWE employees. The number of visitors is expected to be a maximum of 12 per day for up to 60 days per year. Additional traffic is not considered to be significant.</p>		

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Corporate Significant ce	ASPECT	Contribu tion. Y/N	Significant S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Ecology						
Medium	Ecology - Species	N	N/A	Ecology is a corporate issue. The new facility, once built, will not present any routine contribution to this aspect.		
Medium	Ecology - Habitats	N	N/A	Ecology is a corporate issue. The new facility, once built, will not present any routine contribution to this aspect.		
Medium	Ecology - Heritage	N	N/A	Ecology is a corporate issue. The new facility, once built, will not present any routine contribution to this aspect.		

APPENDIX 10
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