Appendix 7: Construction Phase PREA

Corporate Significance	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.		

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.

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 bowsers, 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.

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.

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Waste – Hazardous (including toxic) Waste	Y	NS	Toxic waste is not expected to be generated during routine construction phase work. 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. Empty paint tins, oil residues and some construction waste may be toxic waste. The overall contribution is not considered to be significant.		Safe Systems of Work will be followed. 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.
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.		

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Medium	Resource Use – Chemical and Oil 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.	
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 10% 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			

Corporate Significance	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						

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 7am – *6pm will be used.* Noise surveys will be periodically carried out. A construction noise assessment is being completed.
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.

Corporate Significance	ASPECT	Contribution. 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. See paragraph 2.1 for comments on building size.		The final building will be finished to modern standards in keeping with the surrounding site. 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						

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
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. ***Trees to be removed will be removed in the autumn months – trees removed will be replaced at another area of site. 6 semi mature trees will be planted.***
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.		

Appendix 8: Operational Phase PREA

Corporate Significance	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 tiny amounts of radioactive materials. However, any potential impact of radioactive materials is automatically considered as 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. An initial BPM study has been completed which has identified the issues. The BPM needs to be completed in the detail design phase.
Medium	To Air – Ozone Depleting Substances	Y	N/S	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.
Medium	To Air – Greenhouse Gases	N	N/A	The facility will not make any direct discharges of greenhouse gases. The facility will incorporate 2 natural gas powered boilers.		

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Air – PPC Main Polluting Substances beryllium	Y	N/S	A small quantity of beryllium will be discharged in some of the laser experiments. The contribution is not considered to be significant. Note: See paragraph 2.2.1	Filtration will minimise discharges.	
Low	To Air – PPC Main Polluting Substances Acids	N	N/A	Acids are not used or discharged during routine operations.		
Low	To Air – PPC Main Polluting Substances Lead	N	N/A	Lead is not used or discharged during the operational phase.		

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Air – Volatile Organic Compounds	Y	N/S	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. *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. Note: See comments at paragraph 4.6. The solvents used for cleaning amplifiers *are not Volatile Organic* Compounds (VOC)		Work will be carried out by trained operatives under a safe system of work.

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Releases to Water						
High	To Water – Radioactive 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.

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 operational staff. 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. Last sentence should read "This is less than 5% of the site contribution..."		The facility will reuse 'grey' water in the domestic facilities, reducing the amount of water required from the on-site borehole. See comments under paragraph 4.8 concerning water saving schemes.

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Releases to Waste						
High	To waste – Radioactive Waste	Y	S	Radioactive waste, both ILW and LLW will be generated on a routine basis. Any contribution to this aspect is automatically significant. Small amounts of radioactive waste, LLW will be generated on a routine basis. No ILW will be produced. However any potential impact of radioactive materials is automatically considered to be significant.		Safe Systems of Work will be followed. A waste service agreement and quality control plan will be produced. A BPM study in accordance with the Radioactive Substances Act 1993 will ensure discharges of waste are kept to a minimum.
Low	To Waste – Hazardous 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.		Safe Systems of Work will be followed. 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.

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	To Waste – Domestic Waste	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 re-cycling 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.	
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.

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Resource Use –Water off site	N	N/A	Off-site water supplies will not be required		
Low	Resource Use - Other	Y	N/A	The building will be connected to the site steam supply and make use of consumable resources including paper. Comment: The building has its own boilers and it is therefore unlikely that it will be connected to the site steam supply.	The building will be constructed to modern standards and be thermally efficient.	

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Resource Use – Electricity and Gas	Y	N/S	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. Note: Electricity usage is expected to be less than 1% of total site usage.	The facility should be equipped with electricity metering.	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.		
High	Land Quality - Solvents	N	N/A	Land quality is a corporate issue.		

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
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.		

Corporate Significance	ASPECT	Contribution. Y/N	Significant. S / NS	DESCRIPTION	ENGINEERED SYSTEMS	MANAGERIAL SYSTEMS
Low	Nuisance – Visual Impact	Y	N/S	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. See paragraph 2.1 for comments about building size.		The final building will be finished to modern standards in keeping with the surrounding site. 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	N/S	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.*		

Corporate Significance	ASPECT	Contribution. 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 9: Sustainability Assessment

Theme	Project Phase	Impact	Mitigation
Climate Change and Air Quality	**Construction**	• Dust is likely to be created by the movement of vehicles on and off site.	• Wheel washes and covered vehicles will be used to reduce dust from vehicles in accordance with AWE Construction Site Rules.
	Operation	• Refrigerants used in equipment. • Combustion by-products from the Gas Powered Boilers • Indoor Air Quality	• All refrigerants will comply with Montreal protocol • Equipment is to modern standards and therefore more efficient than the existing HELEN supply from the main AWE Boilerhouse. The new system will have a reduced energy loss. However, due to the larger size of Orion more energy will be required. The boilers are designed to be energy efficient with low NO_x (See section 4.8). • Indoor Air Quality will be an improvement on the existing HELEN building. The modern heating and vent system gives 'comfort cooling' by chilled air.
Travel and Transport	**Construction**	Increase in HGV's and construction staff vehicles entering the site.	To mitigate any potential congestion a traffic management plan has been established. An additional gate leading to the Orion construction site will be used, this will reduce congestion and emissions to air by reducing the amount of time engines spend 'idling'. Deliveries will be timed (where possible) to avoid peak traffic hours.
	Operation	Increase in traffic movements.	Existing HELEN staff will be using the Orion facility; therefore the only additional vehicles will be those of visitors using the facility.

Energy Consumption	**Construction**	Increase in personnel and facilities	During the construction period there will be additional staff and the associated additional welfare facilities on site. These will be connected to the AWE mains supply, energy consumption will therefore increase.
	Operation	Increase in energy use due to comparative size of Orion to the existing facility.	An extensive range of energy-saving devices and strategies will be employed in the Orion facility. See section 4.8 for more details
Noise and Vibration	**Construction**	Noise from the construction site.	A construction noise assessment has been completed to the relevant British Standards. It concluded that the increase in noise levels from the construction site are likely to be negligible. A vibration assessment of the current use was also completed and found that vibration from the main road adjacent to the site was the main cause of vibration.
	Operation	Increase of noise and vibration	Due to the nature of the activities carried out in the building there will be no vibration from the building. The building layout has been designed to avoid installing equipment likely to cause a noise nuisance on the roof. It will be situated away from the AWE site fence line and abatement technologies will be used with an aim to keep the noise level from the facility to the levels found in the 2001 and 2005 baseline AWE Site Noise Surveys.

Water and Drainage	**Construction**	• Increase in personnel	• During construction the increase in personnel will mean an increase in the amount of water used.
		• Potential for polluting matter to enter the drainage system	• All chemicals, diesel and oil will be stored in either chemical stores or bunded. Diesel and oil stores will comply with the relevant legislation. • Any sediment from abstracted groundwater and water pumped from the excavations will be settled out and analysed prior to disposal to the Trade Waste Treatment Plant. The strategy for the disposal of abstracted groundwater is under development and will be discussed with and presented to the relevant authorities prior to implementation
		• Proximity to a 'Special Site'.	• The Orion site is adjacent to a EPA Part 2A Special Site, currently under remediation. A study carried out by EDGE Consultants has found that the dewatering phase of the Orion construction is unlikely to draw groundwater from the remediation zone.

Water and Drainage	**Operation**	• Runoff from increase in hardstanding	• Due to the current land-use and the future layout of project Orion there will be no net increase in the amount of runoff from the area. Moreover, the rainwater harvesting system will reduce the amount of runoff.
		• Water Usage	• The building design incorporates water saving devices to reduce the amount of potable water used. These include rain water harvesting and design features such as auto-shut-off taps and reduced capacity cisterns. The facility will be metered to monitor water usage.
		• Change to storage of potentially polluting material	• Hazardous liquid waste will be stored, in accordance with current AWE practices, in a holding tank (one month capacity) before being transferred via tanker to the AWE Trade Waste Treatment Plant for treatment prior to disposal via a consented disposal route.
Waste	**Construction**	• Spoil from excavations	Both types of waste will be disposed of in accordance with the Waste Management Plan.
		• Construction Waste	• Spoil will be analysed before being disposed of to the appropriate landfill. • Construction waste will be segregated and recyclable material such as metals and woods will be sent for recycling. • Where possible surplus/ reusable material such as wooden pallets will be returned to the supplier.

	Operation	Waste generated from routine operations.	Recyclable materials will be collected in accordance with current AWE procedures covering office waste, cardboard, cans and glass. Due to the nature of the activities there is not anticipated to be an increase in operational waste.
Land, buildings and Construction Materials	**Construction**	Construction Materials	Recycled rubble from buildings demolished elsewhere on the AWE site will be used as hardcore.
	Operation	Visual Impact of New Building	AWE is a brownfield site, the chosen Orion location is currently a mix of concrete, tarmac and hardstanding. In previous use, buildings were located on the area. The new building will be designed to modern standards and will be in keeping with future developments. The building design has been refined throughout to improve its impact on the surrounding environment. The new building has allowed for greater resource saving technologies in the forms outlined above and in the increase in insulating materials use. Screening in the form of additional trees will be incorporated into the landscaping. The location of the facility will reduce the distance staff and construction materials are required to travel.

Geology and soils	**Construction**	• Off road vehicle use, construction activities and structural instability • Surplus soil removal and disposal • Development of land with the potential to be contaminated	• Piling rigs will be used on the construction site. To prevent any impact on the underlying soils, a piling pad of hardcore will be installed prior to any works being carried out. • Spoil will be analysed for radiological and chemical content before being disposed of to the appropriate landfill site. • Site investigations have not found the development area to be contaminated. Boreholes still located in the construction area have been covered to prevent the potential for cross contamination but are still available for groundwater monitoring purposes.
	Operation	Impact on Land Quality during operation	No impact is anticipated, the same storage requirements for chemicals which are used in the existing facility will be used in Orion.
Biodiversity and Nature Conservation	**Construction**	Potential for protected species	Although protected species are present on the AWE site as a whole, there is no record of any in the Orion construction zone. Nevertheless, in view of the inevitable increase in disruption in the construction area, a specialist ecologist will be employed to inspect the only area with the potential to provide a habitat for protected species.
	Operation	Impact on species during operation	No impact is anticipated.

Archaeology and Historic Environment	**Construction**	Impact on potentially important archaeological areas	There is one archaeological monument on the AWE site, this is not close to the construction site. There is no previous evidence or indication of the construction area containing archaeological features. However, a plan for accommodating the potential for unexpected features to be discovered will be established with the advice of the MoD's archaeology specialists.
	Operation	Impact on historic features during operation.	No impact is anticipated during operation.
Landscape and Townscape	**Construction**	Impact of construction on the landscape	The construction will impact the landscape for its duration.
	Operation	Impact of Orion on the Landscape	The new building will be designed to modern standards and will be in keeping with future developments. The building design has been refined throughout the project to improve its impact on the surrounding environment. Screening in the form of additional trees will be incorporated into the landscaping. The location of the facility will reduce the distance staff and construction materials are required to travel. Lighting requirements for Orion will be in keeping with current AWE lighting, this is a security requirement.

Health Safety and Crime	**Construction**	Site Safety and Security	The Orion site is within the current AWE security boundary and the public will therefore be prevented from straying into the construction area. Health and Safety induction and weekly briefings will be carried out throughout the construction phase for all workers attending the site. A Pre-Construction Environment, Health and Safety Plan is in place outlining the AWE Health and Safety arrangements.
	Operation	Facility Safety and Security	There will be a small change in visitor levels and therefore workload. AWE has welfare facilities and support in place to cope with this increase. The safety procedures currently in use in the existing facility will be repeated in the Orion facility, where relevant, and reviewed for opportunities for improvement prior to implementation.
Communities and Social Values	**Construction**	• Increases in personnel • Community	There will be additional personnel living in and commuting to the area during the construction phase of the project. This will lead to an increase in the use of local services such as B&B and hotel accommodation. This will also bring a small increase in the amount of traffic in the immediate area. The amount of consultation with the local community and AWE has increased over recent years. AWE aim to ensure that this continues, although security issues do constrain some discussion areas.
	Operation	Increase in personnel	There will be no permanent increase in personnel moving to the area. However, there will be visitors e.g. academics to the Orion facility boosting the use of some local services.

Infrastructure and Amenities	**Construction**	Increase in Personnel	There will be an increase in staff during the construction period and a commensurate increase in the requirement for services in the local area.
	Operation	Changes to building affecting local infrastructure	There will be no permanent increase in personnel travelling to the AWE site due to Orion. The building will be DDA compliant. Orion will provide a unique education facility to support academic research in the UK and internationally.
Economy and Employment	**Construction**	Increases in personnel	There will be additional personnel living in and commuting to the area during the construction phase of the project. This will lead to an increase in the use of local services such as B&B and hotel accommodation. This will also bring a small increase in the amount of traffic in the immediate area. Both AWE and the Orion construction staff will gain experience from the construction of this unique facility. Due to security requirements, UK Nationals only will be employed on this project.
	Operation		The new facility will continue to provide a diverse range of jobs in the area. It will support the academic community and the future prospective workforce in their university education.