

Submarine Dismantling Project

Glossary of terms

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Term	Definition
ALARP	As Low As Reasonably Practicable. A principal that risks should be reduced to be as low as reasonably practicable. Reasonably practicable involves weighing a risk against the trouble, time and money needed to control it. The term is at the heart of the British health and safety system and a key part of the general duties of the Health and Safety at Work Act 1974. see www.hse.gov.uk/comah/alarp.htm
Afloat Storage	Where submarines that have been taken out of service are prepared for long term storage in a water-filled basin i.e. a large dock where several vessels can be stored.
Authorisation	Authorisations allow specific defence-related nuclear activity to take place. Such 'Authorised' sites are not subject to the Nuclear Installations Act (unlike civil nuclear sites) and so activities are not formally 'Licensed.' Instead, Authorisations are granted by the Defence Nuclear Safety Regulator.
BAT	Best Available Technique. A term relating to regulations on limiting pollutant discharges. BAT is required to be considered under EC Directive 96/61 in order to avoid or reduce emissions that result from certain installations and reduce the impact on the environment as a whole.
BPEO	Best Practicable Environmental Option. A set of procedures adopted by Great Britain with the goal of managing waste and other environmental concerns. BPEO has been defined as <i>"the outcome of a systematic consultative and decision making procedure which emphasises the protection and conservation of the environment across land, air and water. The BPEO procedure establishes for a given set of objectives, the option that provides the most benefits or the least damage to the environment, as a whole, at acceptable cost, in the long term as well as the short term"</i> (see link below). http://www.environment-agency.gov.uk/research/policy/32949.aspx
Brownfield	Also referred to as Previously Developed Land. This term refers to land which is, or has, previously been built upon or otherwise developed.
CADMID	The MOD Project cycle, consisting of the following phases – Concept, Assessment, Demonstration, Manufacture, In-service, Disposal.
CBO	Community Based Organisation.
CIOP	Consultation on ISOLUS Outline Proposals. The second ISOLUS public consultation that took place in 2003.
COEIA	Combined Operational Effectiveness and Investment Appraisal. A specific type of analysis applied to defence equipment procurement decisions.
CoRWM	Committee on Radioactive Waste Management: This independent committee provides scrutiny and advice to Government on the long term management of radioactive waste, including storage and disposal. See http://corwm.decc.gov.uk/ for more details.
COTS	Commercial Off The Shelf. An acquisition term defining an item of supply that is sold in substantial quantities in the commercial marketplace, and can be procured and utilised under government contract in the same form as available to the general public.
CRUD	Radioactive deposits, mixed impurities and corrosion materials.
CWE	Collaborative Working Environment. A computer based document and data management system, utilised by the MOD and SDP.
DBERR	Department of Business and Regulatory Reform. Formerly the Department of Trade and Industry and now the Department for Business, Innovation and Skills
DDL	De-Fuel, De-Equip and Lay-Up Preparation. The process at the end of a submarines operational life where it is de-equipped, defuelled, and prepared for afloat storage.
DE	Defence Estates. MOD organisation, now renamed the Defence Infrastructure Organisation, responsible for management of the Defence Estate.
DE&S	Defence Equipment & Support. A MOD organisation that equips and supports the UK's armed forces for current and future operations. See www.mod.uk/DefenceInternet/MicroSite/DES
DECC	Department of Energy and Climate Change (DECC). DECC was created in 2008 bringing together energy policy previously with DEFRA and other departments. The NDA is responsible for implementing geological disposal of radioactive waste on behalf of DECC. See www.decc.gov.uk
DEFRA	Department for Environment, Food and Rural Affairs. A government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the United Kingdom. See www.defra.gov.uk
DfT	Department for Transport. The government department responsible for the English transport network and a limited number of transport matters in Scotland, Wales and Northern Ireland which are not devolved. The DfT seeks to ensure safer transport and this applies to the transport of hazardous materials. see www.dft.gov.uk
Defuel	The removal of spent (used) nuclear fuel from the submarine's reactor after it has left service. Submarines will be defuelled before they become part of SDP and are dismantled.
DIO	Defence Infrastructure Organisation. The DIO, previously Defence Estates, manages the military estate, including accommodation for Service personnel and their families, on behalf of

	the MOD. See http://www.mod.uk/defenceinternet/microsite/dio/
DNSR	Defence Nuclear Safety Regulator. MOD internal regulator responsible for managing the safety of the MOD nuclear programme where external regulators do not. It develops MOD nuclear safety policy and regulatory standards under delegated authority.
DSA	Disposal Services Authority. The DSA is an MOD organisation responsible for the disposal of surplus MOD assets, including ships for recycling. See www.edisposals.com
DSM	Director Submarines – Rear Admiral responsible for delivering the MOD nuclear submarine programme, of which the SDP is part.
DTI	Department of Trade and Industry. Former government department replaced by the Department for Business, Innovation and Skills.
EA	Environment Agency. The environmental regulator for England and Wales. The Agency's role is the enforcement of specified laws and regulations aimed at protecting the environment, in the context of sustainable development, predominantly by authorising and controlling radioactive discharges and waste disposal to air, water (surface water, groundwater) and land. The Environment Agency also regulates nuclear sites under the Environmental Permitting Regulations and issues consents for non-radioactive discharges. See www.environment-agency.gov.uk
EIA	Environmental Impact Assessment. A legal requirement under EU Directive 85/337/EEC (as amended) for certain types of project, including various categories of radioactive waste management project. It requires information on the environmental impacts of a project proposal to be submitted by the developer and evaluated by the relevant competent authority (the planning authority, HSE or other regulators concerned).
FEC	Front End Consultation – the first stage of public consultation on Project ISOLUS that took place in 2001.
FOI	Freedom of Information Act 2000.
GDF	Geological Disposal Facility. The government's proposed long-term, below ground facility for disposing of the UK's Higher-Activity Nuclear Waste (HLW and ILW). The site for the GDF has not yet been identified. For more details see http://mrws.decc.gov.uk/en/mrws/cms/home/What_is_geolog/What_is_geolog.aspx .
Greenfield	Also referred to as Undeveloped Land. This term refers to land that has not previously been developed (such as farmland), or which has been used but has reverted back to a largely 'natural' state (such as disused quarries).
Hazard	A property or situation that in certain circumstances could lead to harm.
Hazardous Waste	Anything in the list of hazardous wastes in The Hazardous Waste (England and Wales) Regulations 2005. http://www.legislation.gov.uk/ukxi/2005/895/schedule/1/made In Scotland, Special Waste is essentially any waste with hazardous properties which may render it harmful to human health or the environment. Elsewhere in the UK and the EC, it is referred to as being Hazardous waste.
HPA	Health Protection Agency. An independent UK organisation set up in 2003 by the government to protect the public from threats to their health from infectious diseases and environmental hazards.
HRA	Habitats Regulation Assessment. This is a statutory assessment, required by the EC Habitats Directive (92/43/EEC) and transposing Regulations, which is carried out on any plan or project that has the potential to affect a European-designated wildlife site. Because Rosyth and Devonport are close to such designated sites, a plan-level HRA has been undertaken for the SDP.
HSE	Health & Safety Executive. The HSE is an independent regulator that acts in the public interest to reduce work-related death and serious injury across workplaces in Great Britain. See www.hse.gov.uk
IA	Investment Appraisal is a method of gathering and analysing financial information in a structured format, to enable decisions to be made as to which of a number of options to meet a specific requirement offers the best value for money.
IAC	Investment Approvals Committee. The MOD Committee responsible for approval of all MOD Investment Proposals over £400M. Formerly known as the Investment Approvals Board (IAB).
IAEA	International Atomic Energy Agency. An international organisation that works for the safe, secure and peaceful uses of nuclear science and technology. See www.iaea.org
ILW	Intermediate Level Waste. Radioactive wastes with a radiological activity above 4 GigaBecquerels (GBq) per tonne of alpha, or 12 GBq/tonne of beta-gamma decay, but which does not generate enough heat to require it to be cooled during storage. By contrast, nuclear fuels are generally much more active, and have to be kept cool. The majority of ILW from submarines is metal within the RPV.
Initial Dismantling	The process where radioactive waste is removed from the laid-up submarines. This work has to take place on a site with an appropriate nuclear site Licence, issued by the ONR.
Interim Storage	ILW is stored for an 'interim' period until a disposal route is available. Interim stores are designed for 100 years to provide safe and secure protection for waste packages. There are

	currently over twenty such sites in the UK.
Investment Appraisal	The process used to inform decisions on whether a long term investment is worth pursuing. An investment appraisal is undertaken in the MOD whenever a decision has to be reached which would involve the commitment of significant resources or would result in measurable benefits.
IO	Integrated Option. In SDP an 'integrated option' represents one <i>complete potential</i> solution to submarine dismantling, and is made up of a series of options for different processes or alternatives – such as where and how a submarine will be dismantled and ILW stored.
IP	Industrial Package. A type of radioactive material package, designed to International container standards as defined in IAEA transportation regulations. See International Atomic Energy Agency (IAEA) 'Regulations for the Safe Transport of Radioactive Material, 2005 Edition' (TS-R-1). http://www-pub.iaea.org/books/IAEABooks/7291/Regulations-for-the-Safe-Transport-of-Radioactive-Material-2005-Edition-Safety-Requirements
ISOLUS	Interim Storage of Laid-Up Submarines. The former name of the Submarine Dismantling Project, changed in 2009 to better reflect the nature of the project.
KUR	Key User Requirement. The Customer's Key Requirements for the project. They are detailed in the User Requirements Document (URD) and are used to assist with the assessment of options, and the measurement of project performance.
Licence / Licensed Site	A Nuclear Licence allows specific nuclear activities to take place at a specific site. Such 'Licensed' sites are subject to the Nuclear Installations Act (1965), with licenses being granted by the Office for Nuclear Regulation (previously the Nuclear Installations Inspectorate). Nuclear power stations and other civil activities are licensed in this way.
LLW	Low Level Waste. This is defined as radioactive waste that has below 4 gigabecquerels per tonne (GBq/te) of alpha activity and below 12 GBq/te of beta/gamma activity. It covers a variety of materials which arise principally as lightly contaminated miscellaneous scrap and redundant equipment. LLW is managed in accordance with the UK's LLW Strategy and with disposal to licensed facilities such as the LLW Repository in Cumbria.
LUSM / LTB	Laid-Up Submarine / Long Term Berthing. LUSM's are prepared for safe LTB, which is the placement of the submarine into long term afloat storage prior to dismantling.
MCDA	Multi Criteria Decision Analysis. The method used in Options Analysis to assess factors that could not be assessed in terms of cost, as to how well they meet the project's requirements (effectiveness). The findings of the MCDA and Investment Appraisal (the financial assessment) are brought together in the Operational Analysis Supporting Paper.
MDAL	Master Data and Assumptions List. An MDAL is an agreed set of Data and Assumptions that are used as inputs to a programme/project so that required outputs can be obtained.
MGBC	Main Gate Business Case. The approvals document utilised in the MOD to seek approval to proceed from the Assessment of options phase into the implementation phase (Demonstration and Manufacture) (see CADMID).
MOD	Ministry of Defence.
Technical Options Study	A study conducted in 2008 to identify features of the three Initial Dismantling options that would impact on their implementation. The outputs were used to inform the MPOS study (see below), particularly the criteria to be utilised. The details are contained in 'SDP Technical Options Study: Options Report'.
MPOS	MOD Proposed Options Study. A study to compare the technical aspects of the three options under consideration for the interim storage of intermediate level waste from the dismantling of nuclear submarines. Unlike the Technical Options Study, the MPOS included weighting and scoring against the selected criteria. Published as 'SDP Technical Options: Analysis Paper'
MoE	Measure of Effectiveness. Measurement of the effectiveness of a given option in meeting the projects requirements. Allows the comparison of options against clear criteria, combining the findings of the MPOS with financial data (see IA). This underpins a Combined Operational Effectiveness and Investment Appraisal analysis (see COEIA).
MRWS	Managing Radioactive Waste Safely. The UK Government's approach to managing the nation's radioactive wastes, irrespective of where they come from and their level of activity. For more details see http://mrws.decc.gov.uk/
NDA	Nuclear Decommissioning Authority. The NDA is a non-departmental public body created through the Energy Act 2004. Its purpose is to deliver the decommissioning and clean-up of the UK's civil nuclear legacy in a safe and cost-effective manner.
NGO	Non-Governmental Organisation. In its broadest sense, a Non-Governmental Organisation is one that is not directly part of the structure of Government such as Friends of the Earth.
NII	Nuclear Installations Inspectorate of the Health & Safety Executive – former organisation now the Office of Nuclear Regulation (see ONR below).
NIREX	Nuclear Industry Radioactive Waste Executive. UK body originally set up in 1982 by the nuclear industry to examine safe, environmental and economic aspects of deep geological disposal of intermediate level and low level radioactive waste. NIREX's staff and functions were integrated into the NDA in 2007.
NRP	Naval Reactor Plant. The UK MODs Naval Pressurised Water Reactor (see PWR).
OASP	Operational Analysis Supporting Paper. The OASP presents the essential foundation evidence on which to construct the Main Gate Business Case (see MGBC).
OCF	Other Contributory Factors. Factors which may affect SDP but are not quantifiable in cost or

	effectiveness terms. These OCFs could have a potentially significant impact on the project's options, and will inform the projects future recommendations.
OE	Operational Effectiveness. Analysis to determine how effectively each SDP option meets the needs of the MOD.
OGD	Other Government Departments such as DECC, NDA, DfT etc.
ONR	Office for Nuclear Regulation. The ONR, an agency within the HSE, seeks to protect people and society from the hazards of the nuclear industry, by ensuring compliance with relevant legislation and by influencing the nuclear industry to create and maintain a good health, safety and security culture. See http://www.hse.gov.uk/nuclear/
Opportunity	A project management term that refers to an uncertain event that, should it occur, would have a positive effect on the achievement of one or more project (or business) goals.
Packaged Waste Storage	RPV removal and size reduction for storage as packaged waste. The option for removing the radioactive materials from the submarine whereby the RPV is removed, cut-up and packaged in appropriate containers for transport, interim storage and ultimately, disposal in the proposed GDF.
PSE	Public and Stakeholder Engagement. The objectives of PSE are to provide stakeholders with the information they need to understand the SDP, and the opportunity to engage with the project, so as to inform MOD's decision making process.
PWR	Pressurised Water Reactor. A type of reactor used by all Royal Navy submarines. The water first passes through the reactor pressure vessel, where it is heated by the nuclear fuel elements. It then passes through a steam generator, where the heat is used to convert water into steam. This steam is then used to drive the submarine's main turbine engines.
RC / RC Separation	Reactor Compartment. This is the central 'slice' of the submarine which contains the nuclear reactor, housed within the RPV, and the primary circuit, which transfers heat to the boiler. RC Separation refers to the option for removing the radioactive materials from the submarine whereby the complete RC is separated from the rest of the submarine and then stored intact.
RAMSAR	A wetland of international importance, designated under the Ramsar Convention. In the United Kingdom, Ramsar Sites are protected in the same way as European sites (e.g. Special Protected Areas and Special Areas of Conservation).
Regulators	The regulators who authorise and monitor nuclear activities to ensure they comply with these standards and principles include: <ul style="list-style-type: none"> • Office of Nuclear Regulation (ONR) – an agency of the Health and Safety Executive • Environment Agency (EA) / Scottish Environment Protection Agency (SEPA) • Department of Transport (DfT) (for the transport of radioactive materials) • Defence Nuclear Safety Regulator (DNSR) See the Factsheet "Regulation".
Risk	The chance that someone or something that is valued will be adversely affected by a hazard, where a hazard is the potential for harm that might arise, for example, from ionising radiation.
RPV / RPV Removal	Reactor Pressure Vessel. The self-contained metal pressure vessel inside the RC which contains the nuclear fuel. RPV Removal and Storage is the option for removing the radioactive materials from the submarine whereby the whole RPV is stored intact.
RWMD	Radioactive Waste Management Directorate of the NDA. Formerly known as Nirex. See http://www.nda.gov.uk/aboutus/geological-disposal/rwmd-work/index.cfm
SAC	Special Area of Conservation. Strictly protected sites designated under the EC habitats directive.
SALMO	Salvage and Marine Operations. An MOD project team that provides salvage, recovery, and transport assistance to Royal Navy and Royal Fleet Auxiliary vessels around the world.
SDP	Submarine Dismantling Project. The Submarine Dismantling Project (formerly ISOLUS – Interim Storage of Laid-Up Submarines), was established in 2000 following a study by the MOD, which concluded that the radioactive waste from the submarines should be stored on land. The aim of the SDP is to deliver a safe, secure, environmentally responsible and cost-effective solution for dismantling 27 of the UK's defuelled nuclear powered submarines including past and current classes.
SDP AG	Submarine Dismantling Project Advisory Group. A national level cross section of individuals from industry, professional bodies, specialist professions, academic institutions, non government organisations and community based organisations that meets at regular intervals to offer independent constructive challenge and advice to the Submarine Dismantling Project
SEA	Strategic Environmental Assessment. A type of assessment undertaken on certain public plans and programmes, to assess the potential environmental effects that they may have, and to identify ways to avoid or minimise damaging impacts and enhance positive ones. SEA gives the public the opportunity to see what those impacts might mean for them and comment on them before decisions are made, so that they can help shape the approach taken.
SEPA	Scottish Environment Protection Agency. The environmental regulator for Scotland. The agency's role is the enforcement of specified laws and regulations aimed at protecting the environment, in the context of sustainable development, predominantly by authorising and controlling radioactive discharges and waste disposal to air, water (surface water, groundwater) and land. SEPA also regulates nuclear sites under the Pollution Prevention and Control Regulations and issues consents for non-radioactive discharges.
Ship	This is the process whereby the hull of the submarine (which forms the bulk of the vessel) is

Recycling	dismantled. It will be very similar to the way in which surface ships are disposed of.
Size Reduction	The term used by the nuclear industry to refer to the process of cutting-up radioactive waste into smaller pieces so that it can be packaged into containers. Size reduction is an established process in the civil nuclear industry.
SQEP	Suitably qualified and experienced personnel.
SPA	Special Protection Areas. Strictly protected sites classified in accordance with Article 4 of the EC Birds Directive. They are classified from rare and vulnerable birds and to regularly occurring migratory species.
SSBN	Nuclear-powered submarines that carry long-range missiles with nuclear warheads, which provide the UK's strategic nuclear deterrent.
SSN	Attack submarines designed to counter enemy submarines and surface ships, conduct surveillance and intelligence gathering tasks and other covert operations. They do not carry nuclear weapons.
URD	User Requirements Document: Defines the MOD customer requirement for the project.
VLLW	<p>Very low level waste. Government policy defines very low level radioactive waste (VLLW), as either:</p> <p>Low Volume VLLW - radioactive waste which can be safely disposed of to an unspecified destination with municipal, commercial or industrial waste ("dustbin" disposal), each 0.1m³ of waste containing less than 400 kilobecquerels (kBq) of total activity or single items containing less than 40 kBq of total activity.</p> <p>or</p> <p>High Volume VLLW - radioactive waste with maximum concentrations of four megabecquerels per tonne (MBq/te) of total activity which can be disposed of to specified landfill sites.</p> <p>The main difference between the two definitions of very low level waste is the need to control the total volumes of VLLW. The maximum activity levels associated with VLLW can be found at the link below.</p> <p>http://www.environment-agency.gov.uk/static/documents/Business/LLW_guidance_note_on_brand.pdf</p>
Waste Hierarchy	A hierarchical approach to minimise the amounts of waste requiring disposal. The hierarchy consists of non-creation where practicable; minimisation of arisings where the creation of waste is unavoidable; recycling and reuse; and, only then, disposal. The Waste Management Hierarchy was first introduced in 1975 in the EU Waste Framework Directive for non-radioactive waste and is an integral part of the development of integrated waste strategies at nuclear and non-nuclear sites (see section 4.2.2 of the SDP Consultation Document).
WLC	Whole Life Cost. WLC refers to the total cost of a project, including disposal/decommissioning costs.