

BURGES SALMON LLP

Glossary of Nuclear Terms

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Foreword

"I very much welcome the initiative by Burges Salmon to create this long-needed standard Glossary of terms which will be of use to people across the nuclear industry – technical and non-technical alike. There are lots of terms and acronyms for the many (and very welcome) newcomers to the industry to get to grips with, and this Glossary is a great place for them to start."

Dr Tim Stone – July 2014

Preface

The nuclear industry uses a unique array of jargon, terminology and acronyms, which can be bewildering and confusing to newcomers.

This Glossary of Nuclear Terms has been produced to assist those new to the UK civil nuclear industry, by explaining and de-mystifying some of the terminology that will be encountered on a daily basis. Understanding the terminology will lead to a greater understanding of the sector, its components and how it works.

The Glossary was originally produced for the 2011 Edition of the 'Burges Salmon Guide to Nuclear Law', with a shortened version appearing on the NIA's dedicated supply chain website SC@nuclear (www.nuclearsupplychain.com) to assist organisations and individuals interested in joining supply chain initiatives. This year we hope it will support for example the latest NDA initiatives to encourage more SMEs into the NDA Estate supply chain, as well helping overseas companies looking to the opportunities in the UK.

Due to its popularity, the content has been updated and its scope broadened in this version. As with any glossary, different people will have different views on the emphasis and interpretation of terms. We are keen for readers to contribute items or re-define them to keep the Glossary refreshed, up to date and as comprehensive and useful to readers as possible.

Burges Salmon hopes you find the Glossary a useful aid in your introduction to the nuclear industry. If you would like to suggest any changes or additions or have any enquiries on content or any issues raised then please do not hesitate to contact me.

Special thanks is extended to all those who contributed to the writing of this Glossary, and particularly the sector-expert peer reviewers.

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Glossary of Nuclear Terms

Acronym/Term	Definition
2004 Protocol	<p>Adopted by the contracting parties to the Paris and Brussels Conventions in 2004, this Protocol revises the Conventions so that additional compensation is provided to more people and for a wider scope of nuclear damage. The 2004 Protocol shifts more of the onus for insurance on to industry and establishes new limits of liability which, notably, increase the minimum amount of a nuclear operator's liability.</p> <p>During 2011, DECC issued a public consultation on how the 2004 Protocol should be implemented into UK law by way of amendment to the Nuclear Installations Act 1965.</p> <p>Following public consultation the Government issued its response in March 2012. A draft order will now be laid before parliament with the purpose of amending the Nuclear Installation Act 1965. A draft copy of the order can be viewed on the DECC website.</p>
AAC	Assistant Access Controller
AACP	Alternative Access Control Point
Absorbed Dose	Quantity of energy imparted by ionising radiation to unit mass of matter such as tissue. Unit gray, symbol Gy. 1 Gy = 1 joule per kilogram. In terms of an effective dose, the Sievert is used – see Sievert for details.
ABWR	<p>Advanced Boiling Water Reactor is the evolution of the BWR design. The ABWR is a third generation reactor developed by GE Hitachi Nuclear Energy. The ABWR is currently licensed in Japan, Taiwan and the United States of America.</p> <p>Following Hitachi's purchase of Horizon Nuclear Power in 2012, GE Hitachi Nuclear Energy has submitted the ABWR to the GDA process in the UK. In the event of successful licensing of the ABWR in the UK, Horizon plans to develop at least 5400MW of new power station capacity.</p>
AC	Access Controller
Accelerated Decommissioning Sites	In line with the commitment made in the NDA's Strategy, the NDA 2011/2012 Business Plan earmarked several Magnox sites (Trawsfynydd and Bradwell) for accelerated decommissioning. Under this plan, funds are directed at swift closure of certain plants.
ACIN	Adverse Condition Investigation
ACP	Access Control Point
ACR-1000	The Advanced CANDU Reactor® (ACR-100®) is an evolutionary, Generation III+, 1200 MWe class heavy water reactor, designed to meet industry and public expectations for safe, reliable, environmentally friendly and low-cost nuclear generation. The ACR-1000 development program has now been completed, with no reactor sales pending.
Actinides / Actinoids	A group of 15 elements with atomic number from that of actinium (89) to lawrencium (103) inclusive. All are radioactive. Group includes Uranium, Plutonium, Americium, and Curium. Actinides are elements with partial occupation of the 5f electron shell. Lawrencium is strictly a transition metal (d-block element) but conventionally included in the actinide grouping. Elements heavier than Uranium are collectively termed Trans-uranics.

Activation	This term refers to the process of creating a radioisotope. This is achieved when a stable element is bombarded with either neutrons or protons.
Activation Products	Activation products are materials made radioactive by neutron activation. Fission products and actinides produced by neutron absorption of nuclear fuel itself are normally referred to by their specific names, and activation products reserved for products of neutron capture by other materials, such as structural components of the nuclear reactor, the reactor coolant, control rods or materials in the environment.
Activity	1 The rate at which radioactive material disintegrates or decays per unit time. The units can be measured as either a Curie (Ci) or a Becquerel (Bq). 2 An activity involving radioactive material that requires a Licence.
Acute exposure	A short, intensive exposure (less than one day) to radiation or to toxic substances which can result in severe biological harm or death.
Additional Protocol	A further agreement between a State and the IAEA containing further measures to improve the efficiency and strengthen the effectiveness of the IAEA safeguards system.
ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road. ADR is implemented in UK law by the CDG Regulations.
ADS	Approved Dosimetry Service
AEC	Assistant Emergency Controller
AECC	Alternative ECC
AECL	AECL is Canada's premier nuclear science and technology organisation. For over 60 years, AECL has been a world leader in developing peaceful and innovative applications from nuclear technology through its expertise in physics, metallurgy, chemistry, biology and engineering. AECL is no longer the Design Authority for the CANDU reactor design (see CANDU).
After Heat	Heat produced by the decay of radioactive materials in a reactor that has been shut down.
AGR	Advanced Gas Cooled Reactor: A term used for the second generation of British Power Reactors, operated by EDF Energy Nuclear Generation (formerly British Energy) which has been part of EDF since 2009. The fuel used in the reactor is slightly enriched uranium oxide clad in stainless steel tubes. The coolant is carbon dioxide and the moderator is graphite. The fuel is manufactured by Westinghouse Ltd at Springfields and reprocessed in THORP.
AIC / EIC	Alternative / Emergency Indication Centre
ALARA	As Low As Reasonably Achievable: A term used in radiation protection making every reasonable effort to keep exposure to ionising radiation as far below the dose limits as practical, consistent with the purpose for which the licensed activity is undertaken, taking into account the state of technology, the economics of improvements in relation to state of technology, the economics of improvements in relation to benefits to the public health and safety, and other societal and socioeconomic considerations, and in relation to utilization of nuclear energy and licensed materials in the public interest. A concept from the ICRP, reflected in the Basic Safety Standards Directive 96/29/Euratom.

ALARP	<p>As Low As Reasonably Practicable (social and economic factors taken into consideration): ALARP is unique to the UK context. ALARP is the process by which radiological impacts to workers and the public are kept as low as reasonably practicable. Ensuring that risks are ALARP is a fundamental requirement of UK health and safety legislation. The fundamental steps in the ALARP process are:</p> <ol style="list-style-type: none"> (a) Define and characterise the problem (b) Generate the potential options to address the problem (c) Assess the options and their merits (d) Identify and justify the best option or options (e) Implement the selected option <p>In the UK, regulatory bodies including Environment Agency and ONR equate the concepts of ALARA and ALARP. Where design has an impact on safety and the environment, it may be possible to undertake one integrated assessment that includes the relevant aspects of BAT and ALARP as many of the objectives of BAT and ALARP are consistent.</p>
ALO	Ambulance Liaison Officer
Alpha particle	An ionising particle consisting of two protons and two neutrons. It is a Helium nucleus – i.e. a helium atom stripped of its two electrons.
AMRC	Advanced Manufacturing Research Centre: The aerospace equivalent of the Nuclear MRC, based on an adjacent site in Rotherham.
Anglesey Energy Island	A collective effort between several stakeholders within the public and private sectors to transform Anglesey Island in North Wales into a hub for energy generation. The initiative is considering the construction of a new nuclear power station at Wylfa (see Wylfa Newydd), offshore wind farms, and tidal and biomass projects. The scheme has been created to generate new jobs and investment in the area.
ANIA	The Award for Nuclear Industry Awareness: A level 2 qualification designed by industry to provide essential knowledge for all entrants to the nuclear sector. It is ideal for Apprentices, Graduates and people transferring into the nuclear sector from another industry.
Annual Dose	Total radiation dose received by an individual in a one year period.
AP1000	Advanced Passive 1100MW nuclear reactor designed by Westinghouse (owned by Toshiba), one of the technologies considered for new nuclear build in England and Wales. This design differs from the EPR™ reactor design of AREVA in that this reactor is smaller and is made up of a series of modules that can be constructed off-site for transport and fitting on-site.
AP1400	KEPCO-designed PWR used domestically but also being built in Abu Dhabi (Braka NPP) and being marketed elsewhere.
AREVA	Global integrated fuel cycle company encompassing mining, conversion, enrichment, fuel manufacture, reactor design and construction, reprocessing and waste management. The designer/manufacturer of the EPR™, ATMEA1™ and KERENA™ nuclear reactors. The group has an expanding renewable energy business including offshore wind, solar, bioenergy and energy storage.
Article 37 Opinion	An opinion from the European Commission confirming that a State's plan to dispose of radioactive waste is unlikely to result in the radioactive

	contamination of the water, soil or airspace of another Member State.
Article 41 EURATOM	A requirement for prospective operators to notify the European Commission of their intent to enter investment contracts for new nuclear facilities.
ASN	Autorité de Sûreté Nucléaire: The French Nuclear Safety Authority is tasked, on behalf of the French State, with regulating nuclear safety and radiation protection in order to protect workers, patients, the public and the environment from the risks involved in nuclear activities in France. It also contributes to informing the citizens.
Associated Development	<p>A planning concept established by the Planning Act 2008 (section 115) and relating to applications to the Secretary of State for development consent for a Nationally Significant Infrastructure Project (NSIP). Associated Development, broadly, is that development which is connected to the principal NSIP development for which development consent is sought.</p> <p>In England, the Secretary of State determines applications for Associated Development where included within an NSIP application. In Wales, responsibility for determining all Associated Development applications lies with the local planning authority.</p>
Atom	The atom is the smallest particle of an element. It consists of a central core, or nucleus, that is made up of protons and neutrons. The protons and neutrons are themselves made up of sub-atomic particles (Quarks in particular). Electrons revolve in orbits around the nucleus.
Atomic energy	This term refers to the energy that is released in nuclear reactions. There are two chief ways this can occur. The first is nuclear fission, whereby a neutron will initiate the breaking up of an atom's nucleus into smaller pieces. The second is nuclear fusion, whereby two nuclei are joined together under intense heat. It is more correctly called nuclear energy.
Atomic mass	The mass of an isotope of an element expressed in atomic mass units, which are defined as one-twelfth of the mass of an atom of carbon-12.
Atomic number	The number of protons in the nucleus of an atom. Symbol Z.
ATP	Authorisation to Proceed: Often issued by ONR in advance of formal accreditation.
Authorisation	See "Licence" or "Permit".
Authority Direction	A direction given by the NDA to a contractor in accordance with the NDA's powers under section 18 of the Energy Act 2004.
Auxiliary feedwater	A backup water supply for a nuclear power plant. It is used to supply water to steam generators during reactor start up and shutdown, and during accident conditions to remove decay heat from the reactor.
AWE	Atomic Weapons Establishment: UK nuclear defence sites in Berkshire (Aldermaston and Burghfield).
BA	Breathing Apparatus
BAC	Barnwood Alert Centre
Backfill	Material used to fill sections of a repository once waste has been emplaced.
Background	This is radiation which comes from cosmic and geological sources and from nuclear weapons testing and to which we are all exposed. Typical

radiation	examples of which include naturally-occurring radioactive materials (e.g. radon which is associated with the decay of uranium and/or as an induced fission product of thorium both of which naturally exist in small quantities in granite) and global fallout which exists in our environment as a result of nuclear weapon testing. Radiation which comes from sources, by-product, or special nuclear materials regulated by the Nuclear Regulatory Commission would not come under this definition. The typically quoted average individual exposure from background radiation is 360 millirems per year / 3,600 micros.
BACO	Breathing Apparatus Control Officer
BACS	Breathing Apparatus Control System
Balance of Plant	Parts of the NPP which lie outside the nuclear and turbine islands.
Barrier	Any material placed between radioactive substances and the environment in order to prevent or restrict dispersal.
Base load	The constant amount of power required to meet a continuous minimum electricity demand.
Base load plant	Can refer to facilities supplying power to meet the base load and also to facilities which typically produce electricity at a constant and predictable rate, such as nuclear and coal-fired, as opposed to facilities which produce an intermittent output.
BAT	<p>Best Available Technique: Applying BAT is a UK regulatory requirement and BAT must be demonstrated throughout the nuclear facility lifecycle.</p> <p>“Best” means the most effective in achieving a high level of protection for the environment as a whole.</p> <p>“Available” requires consideration of:</p> <ul style="list-style-type: none"> (a) whether the techniques under consideration have been developed on a scale which allows implementation in the relevant industrial sector; and (b) whether the conditions mean that techniques are economically and technically viable, taking into consideration both the benefits and detriments. <p>“Techniques” includes both the technology used and the way in which the installation is designed, built, maintained, operated and decommissioned.</p>
BATNEEC	Best Available Technique Not Entailing Excessive Cost: a modification of BAT incorporating an element of financial realism!
BCD	Burst Can Detection
BDBA	Beyond Design Basis Accident
BE	British Energy is the former name of EDF Energy Nuclear Generation Limited, the UK's largest electricity generator, which since 2009 has been a wholly owned subsidiary of EDF Energy. It is the current site licensee for the AGR & PWR second-generation power stations in the United Kingdom. The stations currently operated by BE are: Hunterston B, Torness, Heysham 1 and 2, Hartlepool, Hinkley Point B, Sizewell B, and Dungeness B.
BEC	Britain's Energy Coast: The economic development and regeneration body

	for West Cumbria with a focus on energy technology of all kinds.
BECBC	Britain's Energy Coast Business Cluster: The Business Cluster of BEC.
Becquerel (Bq)	The unit of radioactive decay equal to 1 disintegration per second. 37 billion (3.7×10^{10}) becquerels = 1 curie (Ci). The Becquerel is named after Henri Becquerel, who shared a Nobel Prize with Pierre and Marie Curie for their work in discovering radioactivity. See REM and Sievert for comparison.
BEPSS	Box Encapsulation Plant Product Store: A plant at Sellafield Limited which is currently part constructed and is subject to a tender for completion, along with a new annex called Direct Import Facility (DIF).
Beta decay	A particular type of radioactive decay in which a beta particle is emitted from an atom. Beta decay can occur in two forms: beta minus or beta plus.
Beta Emitter	A radionuclide which decays by emission of an electron or positron.
Beta minus	Beta decay in which an electron is emitted from an atom (β^-).
Beta particle	An electron emitted by the nucleus of a radionuclide in beta decay.
Beta plus	Beta decay in which a positron is emitted from an atom (β^+).
Beyond Design Basis Accident	An accident that is more serious than the one against which the plant was designed.
Biological Shield	This is a mass of absorbing material which is placed around a reactor or radioactive source in order to reduce the radiation to a level safe for humans.
BIS	<p>Department for Business, Innovation and Skills.</p> <p>The key elements of BIS's Strategic Programme are as follows:</p> <p>To promote the creation and growth of business and a strong enterprise economy. This includes work to strengthen the UK's enterprise culture and environment, simplifying business support and delivering stronger regional economies through enhanced economic performance.</p> <p>To lead the better regulation agenda. This includes work to reduce the administrative burden of regulation faced by business by 25 per cent, ensuring enforcement of regulation is consistent and proportionate and ensuring new regulations are only brought in when benefits justify the costs.</p> <p>To champion free and fair markets, working with other countries to liberalise international markets and support development, developing rules to maintain competition and promote competitive business environments in the UK and EU, and to empower employees and consumers.</p> <p>BIS is the shareholder in a number of Government-owned businesses (such as the Royal Mail) that make a significant contribution to the UK economy.</p>
BNFL	<p>British Nuclear Fuels plc: Formerly a nuclear company owned by the UK Government and the holding company for British Nuclear Group and Nexia Solutions (now known as NNL).</p> <p>On 1 April 2005, all BNFL assets and liabilities of BNFL were transferred to the NDA under nuclear transfer schemes provided for by the Energy Act 2004. Further assets were subsequently sold. In October 2010, the</p>

	Government announced that BNFL was to be formally abolished.
BNI	Balance of Nuclear Island
BOCI	Balance of Conventional Island: All components, equipment and systems included in the conventional island scope, with the exception of the turbine generator plant
Boiling Water Reactor ('BWR')	A reactor design where water is allowed to boil in the core. The resulting steam is used to drive a turbine and electrical generator, thereby producing electricity. Decommissioning boiling water reactors has to take into account the radioactivity of the turbines resulting from leakage from fuel elements into the water and thus the steam which is in direct contact with the turbines.
BONI	Balance of Nuclear Island: All components, equipment and systems included in the nuclear island scope, with the exception of the nuclear steam supply system (NSSS).
BPEO	This term has now been replaced by BAT for environmental optimisation. Permitted nuclear sites may still be using this terminology based on historical practices.
BPM	This term has now been replaced by BAT for environmental optimisation. Permitted nuclear sites may still be using this terminology based on historical practices.
Breeder reactor	A reactor designed to produce more fuel (fissile material) than it consumes.
Britain's Energy Coast	West Cumbria has major nuclear and wider energy assets and internationally competitive expertise and skills in a range of related activities, including environmental remediation, engineering and decommissioning. Employment in Research and Development is double the regional average. Britain's Energy Coast aims to utilise these strengths and assist the UK to achieve its policy objectives and secure jobs for the local economy.
Brussels Convention	The Brussels Convention Supplementary to the Paris Convention of 29 July 1960 was adopted in 1963 to provide additional funds to compensate damage as a result of a nuclear incident where Paris Convention funds proved to be insufficient. The Brussels Convention stipulates that public funds are to be provided for this purpose, not only by the state where the liable operator's nuclear installation is located, but also by contributions from all parties to the Brussels Convention. The principles of the Brussels Convention are implemented into UK law by the Nuclear Installations Act 1965.
BUE	Backup Equipment
Burnup	Measure of thermal energy released by nuclear fuel relative to its mass, typically Gigawatt days per tonne of fuel (GWd/t).
C&I / I&C	Control and Instrumentation / Instrumentation and Control: NPP C&I comprises or contributes to some of all of the following; automatic control of plant, alarms and indications, visualisation of plant parameters, facilities to allow manual plant control, automatic protection systems, engineered safety features.
CANDU	CANDU Reactor: A Canadian-invented, pressurized heavy water reactor developed initially in the late 1950s and 1960s. The acronym 'CANDU', a registered trademark of Atomic Energy of Canada Limited, stands for 'Canada Deuterium Uranium'. This is a reference to its deuterium-oxide (heavy water) moderator and its use of uranium fuel (originally, natural

	uranium). All current power reactors in Canada are of the CANDU type.
CANDU Energy	Candu Energy Inc. is a Canadian wholly owned subsidiary of Montreal-based SNC-Lavalin Inc., specializing in the design and supply of nuclear reactors, as well as nuclear reactor products and services. Candu Energy Inc. was created in 2011 when parent company SNC-Lavalin purchased the commercial reactor division of Atomic Energy of Canada Limited (AECL), along with the development and marketing rights to CANDU reactor technology.
Canister (waste)	A vessel for waste for handling, transport, storage and/or disposal. It is part of the waste container and the waste package. An example would be molten glass poured onto high level waste glass and in a specially designed canister, to cool and solidify. Canister usually refers to high level waste.
CAP	Corrective Action Program
CARB	Corrective Action Review Board
Carbon Floor Price	The minimum value at which carbon can be traded. The setting of a carbon floor price is essentially a regulatory/taxation policy which obliges polluters to pay at least a minimum value for the right to pollute. In the UK, this floor price was originally adopted as part of a range of measures collectively referred to as Electricity Market Reform.
Care and maintenance	A stage in the process of decommissioning a nuclear site. It begins when the only significant buildings left on a site are the reactor buildings and an ILW store – these will be removed at the dismantling stage.
Carrier	Any person, organisation or government entity undertaking the carriage of radioactive material by any means of transport.
CAT A/B/C functionality	Method of identification of the importance of a particular function, or a set of functionality, to nuclear safety. Definition provided in IEC 61226 Nuclear power plants - Instrumentation and control important to safety - Classification of instrumentation and control functions.
CAT1	Material defined as such by Civil Nuclear Industry Classification Policy issued by ONR, "Information Concerning the Use, Storage and Transport of Nuclear and Other Radioactive Material".
Category I Nuclear Material	As defined in Part 5 of IAEA Document INFCIRC/225/Rev.4
Category II Nuclear Material	As defined in Part 5 of IAEA Document INFCIRC/225/Rev.4
CC	Communications Co-ordinator
CCA	Contamination Control Area
CCF	Common cause failure: Failure of two or more items of redundant plant, where the failure is linked by a common initiator.
CCFE	The Culham Centre for Fusion Energy: the UK's national fusion research laboratory (formerly 'UKAEA' Culham). Owned and operated by the United Kingdom Atomic Energy Authority.
CCGT	Combined Cycle Gas Turbine: In combined cycle gas turbine plant, a gas turbine generator generates electricity and the waste heat is used to make steam to generate additional electricity via a steam turbine; this last step enhances the efficiency of electricity generation. In a thermal power plant, high temperature heat as input to the power plant, usually from burning of fuel, is converted to electricity as one of the outputs and low-temperature

	heat as another output.
CCR / MCR	Central Control Room / Main Control Room
CCW	Countryside Council for Wales: Welsh Government-sponsored body with responsibility for nature conservation in Wales.
CDG Regulations	Carriage of Dangerous Goods and Use of Transportable Pressure Equipment Regulations 2009 (SI 2009 / 1348).
CDM Regulations	Construction (Design and Management) Regulations 2007 (SI 2007/320).
CEA	Commissariat à l'Energie Atomique et aux Energies Alternatives: The French Alternative Energies and Atomic Energy Commission, owned and run by the French Government.
CEDE	Committed Effective Dose Equivalent which is the total dose to specific organs or tissues from an intake of radiation multiplied by the applicable weighting factor for that organ.
CEMS	Continuous Emergency Monitoring Equipment
CESC	Central Emergency Support Centre
CfD	See Contract for Difference.
CGNPG / CGN	China General Nuclear Power Group, the proposed investors in the UK EPR projects in association with EDF.
Chain reaction	A reaction that initiates its own repetition. In a fission chain reaction, for example, neutrons released in <i>fission</i> produce an additional <i>fission</i> in at least one further nucleus. These, in turn, can be absorbed by other fissionable nuclei, releasing still more neutrons. Where the number of neutrons released in a given time equals or exceeds the number of neutrons lost by absorption the fission chain reaction is self-sustaining.
Characterisation	The process of classifying nuclear material.
Characterisation Plan	A plan to characterise a nuclear site, prior to and after remediation activities. More generally, can be applied to any plan to characterise all or part of a nuclear facility.
Chernobyl incident	A nuclear accident that occurred on 26 April 1986 at the Chernobyl Nuclear Power Plant in Ukraine. An explosion and fire released large quantities of radioactive contamination into the atmosphere, which spread over much of Western USSR and Europe. It is considered the worst nuclear plant accident in history, and is one of only two classified as a level 7 event on the International Nuclear Event Scale alongside the 2011 events at Fukushima Daiichi in Japan. The Chernobyl site has been covered by a concrete and steel encasement (due to be replaced in 2014), and the large evacuation zone around it remains largely uninhabited.
CHP	Combined Heat and Power or Cogeneration is the use of a heat engine or a power station to simultaneously generate both electricity and useful heat.
CI	Conventional Island: that part of a nuclear plant that does not form part of the nuclear island. The conventional island is sub-divided into the turbine generator (i.e. the plant that converts the nuclear steam into electricity) and everything else that needs to be designed, constructed and tested to

	complete the conventional island i.e. the balance of conventional island.
CID	Capital Investment Decision
CITB	Construction Industry Training Board
CITD	The Construction Industry Training Board: The Sector Skills Council and Industry Training Board for the construction industry.
Cladding	This refers to the thin-walled metal tube that forms the outer jacket of a nuclear fuel rod. Its primary purpose is to prevent corrosion of the fuel by the coolant and the release of fission products into the coolant. Aluminium, stainless steel, and zirconium alloys are typical cladding materials.
Class 1 / 2 / 3 plant	Method of identification of the importance of a particular item of plant to nuclear safety. Definition provided in IEC 61226 Nuclear power plants - Instrumentation and control important to safety - Classification of instrumentation and control functions.
Clean-up	A term used in conjunction with decommissioning. Once a nuclear facility has been decommissioned the site needs to be cleaned-up to remove any possible contamination. The site is then returned (after consultation with the local community) to either a greenfield or brownfield site.
Clearance	Removal of certain levels of de minimis radioactivity from regulatory control.
Cliff Edge Effect	A significant consequence that is disproportionate to the change that caused it.
Cm	Curium: A transuranic radioactive element, atomic number 96. CM is dense and silvery with a high boiling point.
CNC	Civil Nuclear Constabulary: Formerly known as 'UKAEA' Constabulary, the CNC was established on 1 April 2005, as directed by the Energy Act 2004. The CNC reports to an independent Civil Nuclear Police Authority ('CNPA'); it operates under the strategic direction of the Department for Business, Innovation and Skills ('BIS'). It is the armed police force which is responsible for the protection of civil nuclear material.
CNPP	Combined Nuclear Pension Plan: Set up by the NDA pursuant to Section 8 and Schedule 8 of the Energy Act 2004.
CNS	<ol style="list-style-type: none"> 1 Civil Nuclear Security: Formerly the OCNS (see below), now part of the Office of Nuclear Regulation (ONR). 2 Capenhurst Nuclear Services: A wholly owned subsidiary of Urenco UK Limited which runs the former Sellafield Limited part of the Capenhurst site under contract from the NDA.
CNSC	Canadian Nuclear Safety Commission: The CNSC regulates the use of nuclear energy and materials to protect health, safety, security and the environment, and to implement Canada's international commitments on the peaceful use of nuclear energy; and to disseminate objective scientific, technical and regulatory information to the public.
COGENT	COGENT is the Sector Skills Council (SSC) for the Chemicals, Pharmaceuticals, Nuclear, Oil and Gas, Petroleum and Polymer Industries. COGENT is licensed by the Government to help employers in these science-using industries to address their workforce development needs so that they can compete successfully.
COL	Combined Construction and Operating Licence: part of the US regulatory

	environment relating to new nuclear build.
Collective Effective Dose	The quantity obtained by multiplying the average effective dose by the number of people exposed to a given source of ionising radiation. Unit man sievert, symbol man Sv. Frequently abbreviated to collective dose.
COMARE	Committee on Medical Aspects of Radiation in the Environment: An independent advisory committee comprised of experts appointed from academic institutions and responsible for advising on the health impacts associated with natural and man-made radiation.
Combustion Activity Permit	A permit to operate combustion plant from the EA under the Environmental Permitting (England and Wales) Regulations 2010 as amended. Required in relation to back up diesel generators for an operational nuclear power station.
Commissioning	The process of bringing new plant into operation.
Competent Authority	See Regulatory Body.
Condenser	This is used to cool exhaust steam from a turbine below the boiling point so that it can be returned to the heat source as water. In a pressurised water reactor, the water is returned to the steam generator. In a boiling water reactor, it returns to the reactor core. The heat removed from the steam by the condenser is transferred to a circulating water system and is exhausted to the environment, either through a cooling tower or directly into a body of water.
Conditioning Facility	A facility which exists for the purpose of changing the chemical or physical form of a material to make it suitable for a specific purpose. Also applied in waste management to a facility for processing waste to condition it for storage, transport and disposal.
Conditions for Acceptance (CFA)	The requirements of a receiving body in relation to the parameters with which the material must comply in order for the material to be accepted into the receiving body's facility.
Confinement	The process of preventing the release of radioactive substances to the environment during operation or following an accident.
CoNP	Certificate of Nuclear Professionalism: A higher educational programme developed in partnership between the NSA Nuclear, the Open University and employers designed to equip individuals with the necessary skills required for working within the nuclear industry.
Consignee	Any person, organisation or government entity which receives a consignment.
Consignor	Any person, organisation or government entity which prepares a consignment for transport.
Container (waste)	See Canister.
Containment area	During the construction of a facility designed to house radioactive materials, a series of containment barriers is put up between the materials inside and the environment outside the facility during construction. This creates separate areas called "containment areas".
Contamination (radioactive)	Radioactive material that is deposited on the surface of or inside structures, areas, objects, or people.
Contract for	A commercial arrangement between the UK government and low carbon

Difference	generators to set the strike price for electricity generated by the new build nuclear reactors and other low-carbon generation facilities. They take the form of a pre-agreed per MWh price, when the market price is below this the government will top up the price to that agreed strike price in the contract for difference, when the market price is above that strike price the generator will pay the difference to the government. The payments will be made through the CfD Counterparty Company whose initial chairman is Dr. Martin Read. The agreement provides long term revenue stabilisation for low carbon generation.
Control of nuclear materials	<p>This function has two aspects:</p> <p>(a) All the provisions implemented by operators to ensure the safety of the materials in their possession: monitoring and accountability, containment, surveillance, physical protection of materials and facilities and protection during transportation.</p> <p>(b) Inspection by governmental or international bodies (e.g. IAEA, EURATOM) to verify the effectiveness and reliability of the above provisions.</p> <p>In both cases control is aimed at preventing any subversive activities.</p>
Control Rods	Devices to absorb neutrons so that the chain reaction in a reactor core may be slowed or stopped by inserting them further, or accelerated by withdrawing them.
Controlled area	An area outside a restricted zone but within the site boundary of a nuclear facility. Access to such an area can be limited by the licensee or the responsible organisation for any reason.
Controlled Waste	Waste which is subject to the provisions of the Environmental Protection Act 1990.
Controlling mind	<p>This legal concept has its origins in health and safety case law relating to corporate manslaughter. In general terms, it is understood as the concept of whether the actions of an individual equate to the “controlling mind” of the company such that the individual should take on the liabilities of the company.</p> <p>The term is frequently used in nuclear and relates more generally to health and safety responsibilities in respect of risk management on a nuclear site. As the holder of the nuclear site licence, the site operator holds specific responsibilities in respect of health, safety and risk management on the nuclear site. The site operator is the only body that can fulfil these responsibilities, and therefore any other related company such as the owner of the site (i.e. the NDA in respect of NDA-owned sites), the parent company of the SLC or even contractors entering the site to carry out work on behalf of the SLC, cannot fulfil the role of “controlling mind”.</p> <p>Examples of behaviour which could be interpreted as “controlling mind” by a company other than the site operator could include instructing the operator to take specific decisions in respect of risk management on site without recourse to an authorisation by the licensed operator. This could include binding the operator to certain contractual obligations which affect or restrict the way in which the operator manages risks on site – the consequences of which could be that the instructing entity “steps into the shoes of the controlling mind” and thereby assumes liability by course of action.</p>
Coolant	Material such as water or pressurised gas that transfers heat from the core.

Copper canister	Sweden – encapsulation technique for the storage of spent nuclear fuel.
CORE	Cumbrians Opposed to Radioactive Environment: Started in 1980 as the Barrow Action Group to oppose the import of foreign fuel through the port of Barrow-in-Furness for reprocessing at Sellafield. Since then, CORE has widened its campaign remit to cover all aspects of Sellafield's operations including the radioactive sea and air discharges, the resultant contamination of the local environment, and the health detriment to local communities and wildlife. Its core mission is to stop reprocessing, stop foreign imports, and stop aerial and sea discharges.
Core	The central heat-producing part of a nuclear reactor which contains the fuel assemblies.
Core Melt	Overheating of the core of a nuclear reactor resulting in the core melting.
CoRWM	Committee on Radioactive Waste Management: An independent committee appointed by the Government. Their original task was to review the options for managing those higher-activity UK radioactive wastes for which there is no agreed long-term solution. Their findings were published in July 2006, to which Government responded in October 2006, resulting in the incorporation of Nirex into the NDA and the establishment of the UK strategy for managing intermediate level nuclear waste within a deep geological disposal facility.
Count	Measuring and monitoring the number of ionizing radiation particles present using radiation detection equipment.
Counterparty Company	The organisation that will pay or receive money under CfD contracts between the government and low-carbon generators. The money to make the payments under the CfD contracts comes from the Levy Control Framework. The spending cap under the Levy Control Framework is set to rise from £2 billion in 2011-12 to £7.6 billion in 2020-21 (in 2011-12 prices).
CRC Energy Efficiency Scheme	The CRC Energy Efficiency Scheme (formerly known as the Carbon Reduction Commitment) is the UK's mandatory climate change and energy saving scheme. The scheme started in April 2010 and is administered by the Environment Agency. The scheme is central to the UK's strategy for improving energy efficiency and reducing carbon dioxide (CO ₂) emissions, as set out in the Climate Change Act 2008. It has been designed to raise awareness in large organisations, especially at senior level, and encourage changes in behaviour and infrastructure.
CRCE	Centre for Radiation, Chemical and Environmental Hazards
Crichel Down Rules	Non-statutory guidance which requires that all surplus land acquired by or under the threat of compulsory purchase is offered back to former owners or their successors.
Critical / Criticality	A medium containing a fissile nuclear material becomes critical when neutrons are produced (by the fission of this material) at the same rate as they disappear (through absorption and leakage to the outside). The point at which a nuclear chain reaction becomes self-sustaining.
Critical mass	The smallest amount of fissile material needed to support a self-sustaining nuclear chain reaction. The critical mass of a fissionable material depends upon its nuclear properties (e.g. the nuclear fission cross-section), its density, its shape, its enrichment, its purity, its temperature and its surroundings.
Cs-137	Caesium-137 is a radioactive isotope of caesium which is formed as a fission product by nuclear fission. In small amounts it can be used to calibrate radiation-detection equipment and can also be used in cancer

	<p>treatments. Caesium shares similar chemical properties to other Group 1 elements including sodium and potassium.</p> <p>If ingested, Cs-137 is distributed fairly uniformly throughout the body's soft tissue, resulting in exposure of those tissues which can be treated with Prussian Blue (Ferric Hexacyanoferrate). The magnitude of the health risk depends on exposure conditions. These include factors such as strength of source, length of exposure, distance from the source, and whether there was shielding between the tissue and the source (such as metal plating).</p>
CSJ	Construction Safety Justification
CTA	Company Technical Advisor
CTP	Counter Terrorism Plan
Culham	The Culham Centre for Fusion Energy ('CCFE') is the UK's national fusion research laboratory (formerly 'UKAEA' Culham).
Curie (Ci)	This unit is used to measure the intensity of radioactivity in a sample of material. The Curie is equal to 37 billion (3.7×10^{10}) disintegrations per second, which is approximately the activity of 1 gram of radium. A curie is also a quantity of any radionuclide that decays at a rate of 37 billion disintegrations per second. It is named after Marie and Pierre Curie, who discovered radium in 1898.
CWS	Cooling Water System: Once-through sea water cooling water systems being adopted for UK sites and commonly used in coastally-sited NPPs.
DA	Design Authority: The entity that has overall responsibility for the reactor design process, approves design changes and is responsible for ensuring that the requisite knowledge is maintained is referred to as the 'design authority'. The NPP operating company is frequently the only organisation that has an overview of the plant design as a whole and of the impact of operation on the design. It is normally expected to take on the role of design authority.
DAC	Design Acceptance Confirmation/ Certificate: Written confirmation issued by ONR that a nuclear reactor design has passed a Generic Design Assessment (GDA, see definition below). ONR may issue an Interim Design Acceptance Confirmation (iDAC) identifying issues to be resolved by the requesting party before issuing a DAC. On 13 December 2012 ONR issued a DAC in respect of the UK EPR™ nuclear reactor.
Dalton Nuclear Institute	Institute at the University of Manchester established in 2005 as a leading centre for nuclear research and education.
DCO	<p>Development Consent Order: Developers of nuclear power stations must apply to the Infrastructure Planning Commission (rather than the Local Planning Authority) for a Development Consent Order. If granted, a DCO will combine a grant of planning permission with a range of other separate consents, such as listed building consent. A DCO can include rights to compulsorily purchase land. There are also special procedures relating to cases such as commons, National Trust land, and land protected under the Green Belt (London & Home Counties) Act 1938.</p> <p>See also definition of IPC.</p>
Decay, radioactive	The decrease in the radioactive nature of any material with the passage of time. This is due to the spontaneous emission from the atomic nuclei of either alpha or beta particles and is often accompanied by gamma radiation.

DECC	Department for Energy and Climate Change: The UK Government Department, created in October 2008, with overall responsibility for policy relating to energy and climate change (together with OND in relation to new nuclear). DECC is working to ensure that the UK continues to enjoy a diverse and low-carbon energy mix, delivered through a market framework to ensure competitive prices. DECC is the sponsoring Government Department for the NDA.
Decommissioning	<p>1 The final phase in the life cycle of a nuclear installation covering all activities from shutdown and removal of fissile material to environmental restoration of the site through to its agreed End State; and/or</p> <p>2 The process of closing down a facility followed by reducing residual radioactivity to a level that permits the release of the property for unrestricted use.</p>
Decommissioning Plan	A plan for the decommissioning of a nuclear facility.
DECON	This is a method of decommissioning in which the equipment, structures, and portions of a nuclear facility and site containing radioactive contaminants are removed. The contaminants are safely buried in a low-level radioactive waste landfill or decontaminated to a level that permits the property to be released for unrestricted use shortly after cessation of operations.
Decontamination	The reduction or removal of (radioactive) material from any structure, area, object, or person. Decontamination may be accomplished by treating the surface to remove or decrease the contamination.
De-designate / De-designation	The formal process under the Energy Act 2004 by which a Designating Direction is revoked or amended by the Secretary of State so that an installation, site or facility (or part of an installation, site or facility) is no longer subject to that Designating Direction.
Deep Geological Repository	A nuclear waste repository excavated below 300 m within a salt dome or bedrock. It entails a combination of waste form, waste package and engineered seals that is designed to provide a high level of long-term storage without future maintenance.
DEFRA	Department for Environment, Food and Rural Affairs: DEFRA leads the Government's view on the radioactive waste issue in the UK.
De-licensing	The process by which the nuclear site licence is revoked or surrendered in accordance with the Nuclear Installations Act 1965 so that land is no longer subject to a nuclear site licence.
Depleted Uranium	Depleted Uranium is Uranium primarily composed of the isotope Uranium-238. Typically, it will have a percentage of Uranium-235 smaller than the 0.7 percent found in natural Uranium. It is obtained from used fuel elements or as by-product tails, or residues, from Uranium isotope separation.
DEPZ	Detailed Emergency Planning Zone: The offsite emergency planning area around a nuclear site where the local authority must have a plan for protecting the public in the event of an offsite nuclear emergency pursuant to regulation 9(1) of REPIR.
Design Basis Accident	The hypothetical accident that informed the design of the plant.
Designate /	The statutory process by which the Secretary of State directs that NDA will

Designating Direction	have certain responsibilities to secure in relation to an installation, site or facility under the Energy Act 2004 through the issuing of a Designating Direction. The Secretary of State must lay a copy of every direction containing a designation before Parliament.
Designated Site	<p>1 Nuclear sites designated under Section 3 of the Energy Act 2004.</p> <p>2 All nuclear licensed sites are 'designated sites' for the purposes of section 128 of the Serious Organised Crime and Police Act 2005, making it a criminal offence to enter such sites without the owner's consent.</p> <p>3 See SPA and SAC.</p>
Detailed Emergency Planning Zone	The area around a facility for which REPPiR requires the local authority to prepare a detailed off-site emergency plan with the purpose of restricting, as far as reasonably practicable, exposure to the public in the event of a radiation emergency.
Detection Limit	The level at which radioactivity can be detected above background levels.
DfES	Department of Education and Skills in Wales
DfT	Department for Transport (see also definition of RMTT)
DGENER	European Commission Directorate-General for Energy
DGSA	Dangerous Goods Safety Advisor
Direct Radiation	Radiation received directly from a source such as a nuclear power plant, rather than indirectly as a result of radioactive discharges.
Directive Wastes	Waste subject to the provisions of the Waste Framework Directive 2008/98/EC of 19 November 2008.
Discharge	Release of gaseous or liquid materials to the environment.
Dispersal	The spread of a radioactive discharge in the environment.
Disposability Assessment	An advisory process carried out by Radioactive Waste Management Limited (RWM) on behalf of the Nuclear Decommissioning Authority (NDA) to provide advice on whether a proposed waste package would be suitable for geological disposal. The process is jointly agreed with and monitored by the Health and Safety Executive, the Environment Agency and the Scottish Environment Protection Agency.
Disposal	In the context of solid waste, disposal is the emplacement of waste in a suitable facility without intent to retrieve it at a later date. Retrieval may be possible but, if intended, the appropriate term is storage. Disposal may also refer to the release of airborne or liquid waste to the environment (i.e. emissions and discharges).
Disposal Facility	See Repository
Diversity	Two separate and independent systems that perform the same task so as to reduce the chances of both failing at the same time.
DNB	Dungeness B (Power Station)
Dose	Measurement characterising the exposure of individuals subjected to radiation. The term dose is often mistakenly used instead of dose equivalent. (a) Absorbed dose: quantity of energy absorbed by matter (living or

	<p>inert) exposed to radiation. It is expressed in Grays (Gy).</p> <p>(b) Dose equivalent: in living organisms, an absorbed dose has different effect depending on the type of radiation (alpha, beta and gamma). To take these differences into account, a dose-multiplying factor is used to produce a “dose equivalent”.</p> <p>(c) Effective dose: sum of weighted dose equivalents deposited on various tissues and organs by internal and external irradiation. The unit of measurement for effective dose is the Sievert (Sv).</p> <p>(d) Lethal dose: fatal dose of nuclear or chemical origin.</p> <p>(e) Maximum permissible dose: dose that must not be exceeded for a given period of time.</p>
Dose Limitation	The process of limiting radiation doses to individuals. Also known as the third radiation protection principle.
Dose rate	The dose rate is the quotient of dose and time. For example, rem or Sieverts per hour.
Dosimeter	Instrument for measuring absorbed dose.
Dosimetry	The theory and application of the principles and techniques involved in the measurement and recording of ionising radiation doses. What is calculated is the absorbed dose in matter and tissue resulting from the exposure to ionising radiation.
DPA	The Data Protection Act 1998
DRAGON	Name of one of the reactors at Winfrith.
Drigg	<p>1 Site of the Low Level Waste Repository in Cumbria.</p> <p>2 Former colloquial name of the Low Level Waste Repository.</p>
DRS	Direct Rail Services Limited: A wholly-owned subsidiary of the NDA, which provides rail transport services for nuclear materials (and other commercial rail freight operations) in the UK. DRS is the only remaining publicly owned rail freight company in the United Kingdom.
Dry Fuel Store	A building specifically designed for the storage in dry conditions of used nuclear fuel from the operation of a NPP.
Dry Storage	Storage of spent fuel in air or an inert gas rather than water.
DSL	District Survey Laboratory
DSRL	Dounreay Site Restoration Limited: The site licence company responsible for the demolition and clean-up of the Dounreay site in the far north of Scotland, the former centre of fast reactor research and development. DSRL is a wholly-owned subsidiary of the Cavendish Dounreay Partnership Ltd, a consortium of Cavendish Nuclear, CH2MHILL and URS. It is funded by the NDA to deliver the site closure programme agreed with the Cavendish Dounreay Partnership.
DSU	Distress Signal Warning Unit.
DTI	Department of Trade & Industry: A predecessor to BIS and DECC. Business, trade and energy matters all came under the remit of DTI.
Dual Use	Civil nuclear related goods, information, software and technology that could be used for developing a nuclear weapon.

DWMP	Decommissioning Waste Management Plan: The part of the FDP that sets out the steps and costs involved in decommissioning a nuclear power station and disposing of the waste.
EA	<p>Environment Agency: The EA'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 disposals to air, water (surface water, ground water) and land.</p> <p>The principal way in which the EA regulates the environmental impacts of nuclear sites is under the Environmental Permitting (England and Wales) Regulations 2010. The equivalent body in Scotland is the Scottish Environment Protection Agency (SEPA) which regulates under the Radioactive Substances Act 1993.</p>
EAEC	<p>The European Atomic Energy Community (EAEC or Euratom): An international organisation which is legally distinct from the European Union (EU), but has the same membership, and is governed by the EU's institutions. It was established on 25 March 1957 (alongside the European Economic Community/EEC) by the Euratom Treaty, being taken over by the executive institutions of the EEC in 1967.</p> <p>See also Euratom.</p>
EAJWG	The Emergency Arrangements Joint Working Group is an internal working group formed by a nuclear operator to ensure good coordination between those organisations directly involved in its nuclear emergency arrangements.
EAL	Evaluation Assurance Level, a security classification for systems.
EARWG	<p>Environment Agencies Requirements Working Group.</p> <p>The purpose of the EARWG is to identify and share good practice in the:</p> <ul style="list-style-type: none"> (a) Minimisation, re-use and recycling of solid radioactive waste (Low Level Waste and Very Low Level Waste) across the industry and in this respect support the UK Nuclear Industry National Low Level Waste Management Plan Re-use and Recycling (RR1) Initiative; and (b) Monitoring/assay of radioactive wastes (solid, liquid and gaseous). <p>In doing so, EARWG will facilitate transparency of the information used by sites to meet the Additional Information and Improvement Requirements (AIIRs) specified in Environmental Permits/Authorisations issued by the Environment Agency (EA) and Scottish Environment Protection Agency (SEPA) to nuclear Operators by sharing information regarding waste minimisation and assay techniques, which in turn will help to reduce costs to sites.</p> <p>More can be found at http://www.rwbestpractice.co.uk/.</p>
EC	Emergency Controller
EC-6 (Enhanced Candu)	<p>The EC6 is a 700 MWe class heavy-water moderated and heavy-water cooled pressure tube reactor. Heavy water is a natural form of water used as a moderator to slow down the fission chain reaction neutrons in the reactor. It is one of the most efficient moderators and enables the CANDU design to use natural uranium as fuel, which is unique to CANDU reactors.</p> <p>One of the unique features of this reactor design is its ability to use alternative fuels such as recovered uranium (RU) from the reprocessing of</p>

	used light water reactor fuel, low-enriched uranium (LEU) and plutonium (Pu) mixed oxide, thorium and actinides, in addition to the conventional natural uranium.
ECC	Emergency Control Centre
ECCS	An Emergency Core Cooling System comprises a series of systems that are designed to safely shut down a nuclear reactor during accident conditions. Under normal conditions, heat is removed from a nuclear reactor by condensing steam after it passes through the turbine. In a boiling water reactor, condensed steam (water) is fed back into the reactor. In a pressurised water reactor, it is fed back through the heat.
ECITB	The Engineering Construction Industry Training Board: A national training organisation for the engineering construction industry which provides information on careers, qualifications and training in engineering construction.
ECO	Export Control Organisation is part of BIS. The ECO is responsible for legislating, assessing and issuing export, trade transshipment and trade control licences for specific categories of 'controlled' goods. This encompasses a wide range of items including so-called dual-use goods, torture goods, radioactive sources, as well as military items.
EDF	<p>Electricité de France: EDF has 58 reactors on 19 sites in France. The first reactors, built between 1958 and 1966, featured GCR (Graphite-Moderated Gas-Cooled Reactor) technology and are now being decommissioned. EDF is also now the owner of EDF Energy Nuclear Generation Limited (formally British Energy) and its fleet of AGR and one 'PWR' reactors in the UK.</p> <p>EDF, through its subsidiary NNB GenCo, is currently committed to a programme of nuclear power generating new build in the UK subject to the Final Investment Decision (FID). It has stated that Hinkley Point C in Somerset will be the first proposed development for a new nuclear power station, followed by Sizewell C in Suffolk.</p>
EDF NG	EDF Energy (Nuclear Generation) Limited (formerly British Energy Generation Limited) is the EDF Energy Group Company that owns and operates the eight operational nuclear power stations in the UK.
EDRMS	Electronic Document Record Management System
Effective dose	The quantity obtained by multiplying the equivalent dose to various tissues and organs by a weighting factor appropriate to each and summing the products. Unit Sievert, symbol Sv. Frequently abbreviated to dose.
EIA	An Environmental Impact Assessment is an assessment process of identifying, predicting, evaluating and mitigating the possible positive or negative impact that a proposed project may have on the environment, together consisting of the environmental, social and economic aspects.
EIA Directive	The EIA Directive (85/337/EEC) as amended
EIA Regulations	The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009
EIC	Emergency Indication Centre
EIP	The Anglesey Energy Island™ Programme: A collective effort between stakeholders within the public and private sector working in partnership to put Anglesey at the forefront of low carbon energy production and servicing, research and development, bringing with it potentially huge

	economic rewards to Anglesey and the wider North Wales economy.
EIR	The Environmental Information Regulations 2004 (SI 2004/3391)
Electron	A very small negatively charged particle which orbits the nucleus of an atom, and can also exist in a free state for short periods of time.
Element	A substance with atoms all of the same atomic number.
Emergency Plan	A plan outlining an Operator's emergency response in the event of a radiological emergency.
Emergency Preparedness	The state of being prepared for a radiological emergency so as to minimise Nuclear Damage.
Emergency Reference Level ('ERL')	One of a dual set of doses likely to be averted by the introduction of countermeasures to protect the public from ionising radiation after a nuclear or other serious accident.
EMR	<p>Electricity Market Reform: The programme of reform to the wholesale electricity market initiated by the White Paper "Planning our electric future: a White Paper for secure, affordable and low-carbon electricity" published in July 2011. The EMR proposals have altered during the process of consultation and pre-legislative scrutiny, but the four key proposals are:</p> <ul style="list-style-type: none"> (a) the introduction of Contracts for Difference (CfD) Feed-in Tarrifs to replace premium Feed-in Tarrifs for medium to large-scale renewable energy generating stations, including nuclear, under which a generator will enter a long-term contract based on a pre-determined "strike price" and will receive variable payments to ensure it receives the agreed tariff; (b) a Capacity Market through which the total amount of back-up capacity needed to ensure security of supply will be bought through a central competitive auction conducted by the National System Operator a number of years in advance; (c) an Emissions Performance Standard to apply to all new fossil fuel power stations over 50MW which will place a limit on the amount of CO₂ emitted to a maximum of 450gCO₂/kWh; and (d) a Carbon Price Floor (introduced through provisions in the Finance Act 2011) to raise the price of carbon from 2013 at around £15.70/t CO₂ following a straight line to £30/t CO₂ in 2020.
Encapsulation	The encasement of radioactive waste (usually LLW and ILW) by an encapsulant such as concrete.
End State	<p>The state and condition to which the site of a designated nuclear power station or facility must be restored in order for the NDA to have fully satisfied its decommissioning responsibilities under the Energy Act 2004. An End State is defined for each of the NDA's individual nuclear sites and is set out in the NDA's Strategy, a document which is consulted upon and agreed with the local community and key stakeholders.</p> <p>When the End State has been realised, the NDA may make an application to the Secretary of State for Energy and Climate Change seeking the modification or revocation (as appropriate) of the relevant site Designating Direction.</p>
ENEC	The Emirates Nuclear Energy Corporation was established to evaluate and implement nuclear power within the UAE and offer joint-venture arrangements to foreign investors for the construction and operation of

	future nuclear power plants.
Energy Act 2004	The NDA came into existence in July 2004 when the Energy Act received Royal Assent. The Act was introduced to give the NDA its legal status and the power to fulfil its responsibilities.
Energy Act 2008	Legislation containing provisions relating to the management and disposal of waste produced at nuclear installations, as well as the finances associated with the decommissioning of nuclear facilities.
Enriched Uranium	Uranium in which the percent composition of Uranium-235 has been increased from the natural level of approximately 0.7% through the process of isotope-separation.
Enrichment	The process used to increase the abundance of fissile isotopes in an element, such as naturally-occurring uranium.
ENSREG	The European Nuclear Safety Regulators Group
Entomb	This is a method of decommissioning whereby the radioactive material is encased in a structurally long-lived material, such as concrete. The entombment structure is appropriately maintained and continued surveillance is carried out until the radioactivity decays to a level permitting decommissioning and ultimate unrestricted release of the property.
Environmental Impact Assessment	A process which predicts the effects of proposed developments on the environment that informs decision-makers in relation to planning permissions, consents, licenses and other statutory approvals as required by EU Directive 337/85/EEC (The EIA Directive).
Environmental Permit	<p>A permit issued by the Environment Agency to control the environmental impacts associated with, among other issues, discharges and waste.</p> <p>Environmental Permits were first introduced in 2007 and replaced the previous consenting regimes of PPC permits and Waste Management Licences.</p> <p>In England and Wales, radioactive substances are covered by the Environmental Permitting regime which replaced the previous authorisation regime under the Radioactive Substances Act 1993.</p> <p>In Scotland and Northern Ireland, radioactive substances are covered by the Radioactive Substances Act 1993 (and subordinate legislation).</p>
EPC Contract	<p>Stands for 'engineer, procure and construct' and is a term used both domestically and internationally to describe a contract under which an engineering contractor undertakes to:</p> <ul style="list-style-type: none"> (a) design process plant (e.g. a petrochemical plant) or power plant (e.g. a turbine generator and ancillary plant, structures and infrastructure) or works with a heavy engineering element, usually to meet a specified level of performance, (b) procure all components comprised in the design, and (c) physically construct and test the plant. <p>The equivalent term used in relation to more standard construction (e.g. housing, office blocks etc.) is 'design-and-build'.</p>
EPCG	Emergency Planning Consultative Group
EPD	Electronic Personal Dosimetry

EPE	Emergency Preparedness Engineer
EPG	Emergency Planning Group
EPGMS (PGMS)	Emergency Plume Gamma Monitoring System is a site boundary system for monitoring any airborne radioactivity released from a nuclear site.
EPR	<p>Evolutionary Pressurised Reactor or European Pressurised Reactor: A reactor designed by AREVA, the first of which is being constructed at Olkiluoto in Finland. Others are being constructed at Flamanville in France and Taishan in China. Two EPR reactors are planned to be built at Hinkley Point C in Somerset. It is classified as a generation III+ reactor due to the level of safety obtained and the economic savings that it achieves in relation to the earlier models.</p> <p>Full details of the reactor and its design can be found at www.epr-reactor.co.uk.</p>
ERL	Emergency Reference Levels are the doses to an individual that could be avoided if a particular countermeasure were deployed in the event of an accident at a nuclear facility.
ERO	Emergency Response Organisation
ESBWR	Economic Simplified Boiling Water Reactor: The latest evolution of General Electric's Boiling Water Reactor ('BWR') design, using passive circulation for normal operations and simplified, passive safety systems. The intention is that the design's simplicity improves the overall safety of the plant, provides more location options, and yields improved economics and operational flexibility. GE Hitachi Nuclear Energy is the owner of the ESBWR.
ESC	Early Site Clearance: Modern PWRs (see below) incorporate a range of design features which facilitate decommissioning, including the use of shielding and barriers to minimise the radioactive activation or contamination of equipment; the design of systems to minimise the creation, transportation and deposition of radioactivity and the use of materials which minimise the creation of radioactive activation products. As a consequence there is less benefit from deferring decommissioning to allow radioactivity levels to reduce over time. The EPR proposed at HPC will apply ESC and decommissioning is expected to be completed within 20 years.
ESFs	Engineered Safety Features: Engineered Systems important to the safety of the plant. These systems relate to shutting down the reactor, provision of cooling, mitigating the effects of a loss of reactor coolant accident (LOCA), or minimizing offsite release.
ESLO	Emergency Services Liaison Officer
ESP	Early Site Permit: Appears to be part of the US regulatory environment leading to the grant of a full Site Licence.
Espoo Convention	The Convention on Environmental Impact Assessment in a Transboundary Context done at Espoo in Finland on 25 February 1991. The International Law behind the Transboundary EIA requirements in the EIA Regs.
ESWS	Essential Service Water System: The ESWS circulates the water that cools the plant's heat exchangers and other components before dissipating the heat into the environment. Because this includes cooling the systems that remove decay heat from both the primary system and the spent fuel rod cooling ponds, the ESWS is a safety-critical system. Since the water is frequently drawn from an adjacent river, the sea, or other large body of

	water, the system can be fouled by seaweed, marine organisms, oil pollution, ice and debris. In locations without a large body of water in which to dissipate the heat, water is recirculated via a cooling tower.
EU ETS	Formerly referred to as the EU Emissions Trading Scheme, the EU Emissions Trading System is one of the key policies introduced by the European Union (EU) to help meet its greenhouse gas emissions target of 8 percent below 1990 levels under the Kyoto Protocol. It is a Europe-wide cap and trade scheme that started in 2005 and is the first of its kind. Each EU member state must develop a National Allocation Plan approved by the European Commission which sets an overall cap on the total emissions allowed from all the installations covered by the System. This is then converted into allowances (1 allowance equals 1 tonne of CO ₂) which are distributed by EU member states to installations covered by the System. At the end of each year, installations are required to surrender allowances to account for their actual emissions. Installations can emit more than their allocation by buying allowances from the market or can sell surplus allowances to the market.
EU Procurement Rules	See Council Directives 89/665/EEC, 92/13/EEC, 92/50/EEC, 93/37/EEC, 93/36/EEC, 93/38/EEC, 98/4/EC, European Parliament and Council Directives 97/52/EC, 98/4/EC, 2004/17/EC and 2004/18/EC and any other EU measures adopted from time to time in relation to procurement, together with the United Kingdom implementing measures and all applicable EU Treaty principles.
EURATOM	The European Atomic Energy Community was initially created in 1957 to coordinate the Member States' research programmes for the peaceful use of nuclear energy. The Euratom Treaty today helps to pool knowledge, infrastructure, and funding of nuclear energy. It ensures the security of atomic energy supply within the framework of a centralised monitoring system.
EURATOM Treaty	Treaty establishing the European Atomic Energy Community, 1957.
Evaporators	Components of the plant at Sellafield used to reduce the volume of the highly active liquor through evaporation.
Event Tree	The analysis of initiating events and their consequences. An event tree starts with an initiating event and develops sequences, based on whether a plant system succeeds or fails in performing its function, and the response of related systems. An event tree provides a graphical and probabilistic representation of the various possible sequences, and hence can be used to determine the probability of negative outcomes from a particular initiating event.
EWA	Early Works Agreement
Export Control	The system of controlling the transfer of any nuclear related material including goods, information, software and technology from the UK to another State.
Exposure	Exposure of an organism to a source of radiation characterised by the dose received. (a) External exposure: exposure from a radiation source located outside the organism. (b) Internal exposure: exposure from a radiation source located inside the organism.
Exposure Pathway	A means by which radiation can reach humans.

FA3	Shortening used for the French plant Flamanville 3. See Flamanville 3.
FAP	Funding Arrangements Plan: The part of the FDP that sets out the Operator's arrangements to deliver sufficient funds to meet the estimated cost of the plans set out in the DWMP.
Fast Breeder	A reactor type which is driven by the use of fast neutrons and which exploits the "plutonium economy" fuel cycle by utilising natural / depleted uranium after an initial fuel charge of plutonium. The fast neutrons (as opposed to the thermal neutrons used in conventional PWR and BWR designs) react with the ^{238}U to produce ^{239}Pu .
Fast neutron	A neutron which has not been slowed down (or "moderated") by a moderator material – typically water or graphite. The slower neutrons are referred to as thermal neutrons – meaning they have the sort of energy associated with "normal" levels of heat.
Fault Tree	The analysis of an event in a top-down manner. The event is analysed by breaking it down at each successive stage to identify what equipment and operator actions, if failed, would lead to the postulated outcome. The fault tree starts with the top event, as defined within the event tree analysis, and at each stage identifies combinations of precursor event(s) using logical operators such as AND and OR.
FCO	Foreign and Commonwealth Office
FCP	Forward Control Point
FDP	Funded Decommissioning Programme: Any operator of a new nuclear power station must have an FDP, approved by the Secretary of State, in place before construction of a new nuclear power station begins and must comply with this programme thereafter. This will include a commitment to pay into a secure, bankruptcy-remote and independently managed fund to cover all the costs of decommissioning, clean up and disposing of the waste. Obligations relating to FDPs are contained in the Energy Act 2008. A robustly independent regulator, the Nuclear Liabilities Financing Assurance Board ("NLFAB") was created under the Act to oversee companies' obligations under the FDP.
FEED	Front End Engineering Design: is the process by which early design and planning of a project is undertaken. The outcomes of FEED will usually provide information for project execution and will assist with gaining more certainty on price models and commercial terms for the project.
Feed in Tariff (FIT)	A means for Governments to set above-market rates for electricity generated from renewable sources. By obliging electricity utility companies to buy renewable electricity at a fixed price for a fixed number of years, renewable installations become cost effective for the installer. A feed in tariff is effectively a subsidy designed to increase the exploitation of renewable energy sources, and to help governments to meet their carbon reduction obligations.
Feedwater	Water used to remove heat from a reactor and produce ('feed') steam to drive the turbine generators.
Fellside Heat And Power Ltd	This company produces electricity and steam through combined heat and power and has a capacity of 170MW, of which 24-26MW goes to the Sellafield site and the remaining 142-146MW goes to the National Grid. The CHP is situated just outside the licensed site at Sellafield.

FID	Final Investment Decision: In a nuclear context the term is used to refer to the final decision of a company to invest or not invest in a particular project.
Film badge	This photographic film is a type of dosimeter used for the measurement of ionising radiation exposure for personnel monitoring purposes. The film badge may contain two or three films of differing sensitivities, and it may also contain a filter that shields part of the film from certain types of radiation.
Fissile material	Any material fissionable by thermal (slow) neutrons. The three primary fissile materials are Uranium-233, Uranium-235, and Plutonium-239. Although this term has sometimes been used as a synonym for fissionable material, it has now acquired this more restrictive meaning.
Fission	Fission creates the release of energy where heavy element atoms are split up into smaller atoms, producing free neutrons and large amounts of energy. The energy is derived from small changes in mass that is converted to energy (Einstein, $E = mc^2$).
Fission products	The smaller atoms produced when a large atom undergoes fission, often extremely radioactive.
Flamanville 3	EDF/AREVA EPR new build project underway in France.
Flask (nuclear – transport)	A shipping container or cask that is used to transport active nuclear materials between nuclear sites within the UK
Flux	This term is applied to the amount of particles or energy that crosses a unit area per unit time. The unit of flux is the number of particles or energy, per square centimetre per second.
FoI / FoIA	Freedom of Information Act 2000: An Act which came into force on 1 January 2005 and gives people the right to request information held by or on behalf of public bodies.
FORATOM	The Trade organisation for the Nuclear Industry in Europe.
Friends of the Earth	See NGO.
FSA	Food Standards Agency
Fuel assembly	Structured collection of fuel rods or elements, the unit of fuel in a reactor.
Fuel cladding	Material used to construct reactor components and designed to maintain a separation between their contents and the coolant. An example is the cladding of a fuel pin that separates the fuel pellets from the coolant. Zirconium and zirconium alloys (Zircalloy) are common cladding materials.
Fuel cycle	The sequence of steps involved in supplying, using, and disposing of the fuel used in nuclear reactors. The fuel cycle is “closed” if it includes the reprocessing of spent fuel and recycling of fissile materials resulting from reprocessing. The term “open” or “once-through” cycle means that the fuel is disposed of in a permanent storage site after use in the reactor.
Fuel Element Debris	Material made up of mainly metal components removed from the casing of fuel elements after use.
Fuel reprocessing	The method of processing reactor fuel in order to separate the reusable fissionable material from waste material.
Fuel rod	A long, cylindrical rod, often 12 to 14 feet in length, made up of fuel pellets containing enriched Uranium in cladding. Fuel rods are bundled into fuel

[Assembly]	assemblies.
Fuel Route	Term used to refer to the set of processes and areas that fuel passes through to be brought onto a nuclear licensed site, prepared prior to use, used for fission, stored on site, undergo its initial on-site treatment and then be removed from site (as spent fuel) for onward processing.
Fukushima incident	The second most serious civil nuclear accident (after the Chernobyl incident) which occurred as a result of the Great East Japan earthquake and resulting tsunami in March 2011. Severe earthquake damage and flooding resulted in equipment failure, core damage from overheating (meltdown) and subsequent releases of radioactive material into the surrounding environment.
Fusion	Thermonuclear fusion: A process in which two or more light nuclei are formed into a heavier nucleus and energy is released.
Gamma radiation	Very high-energy electro-magnetic rays produced during radioactive decay. These are similar to visible light and X-rays but significantly more energetic than the latter.
Gas-cooled reactor	Broad / generic expression describing a nuclear reactor where gas is used as the coolant.
GDA	Generic Design Assessment: The joint assessment by the Health and Safety Executive and the Environment Agency to ensure that any new nuclear power stations built in the UK meet the highest standards of safety, security, environmental protection and waste management.
GDF	Geological Disposal Facility: A long term nuclear waste management option involving the disposal of waste in an engineered underground facility, where the geology provides a barrier against the escape of radioactivity and where the depth protects the waste from disturbances rising at the surface. Depth in this context can refer to both horizontal as well as vertical depth, for example if the disposal facility is built into the side of a mountain.
GDF (Suez)	French utility company which holds a stake in the NuGen nuclear new build project at Moorside in Cumbria.
GE Hitachi Nuclear Energy	Established in 2007 GE Hitachi Nuclear Energy is a global alliance between Japan's Hitachi and the United States' General Electric Co with the purpose of providing services under synergetic cooperation for the whole nuclear power business: from research and development, design, manufacturing, construction, test runs, operation and system maintenance. It is known as Hitachi-GE Nuclear, Energy Ltd in Japan.
Geiger Counter	A detection instrument used to detect particles of ionising radiation - alpha particles, beta particles or gamma radiation. Named after Hans Geiger (1882-1945).
Generation I	The earliest commercial nuclear power stations designs, including Magnox in the UK.
Generation II	The set of designs which makes up the bulk of today's nuclear power stations, including PWRs, BWSs, CANDU, VVER and AGR.
Generation III	Reactor designs available for construction today, making more use of passive safety features and including AP1000, EPR, Advanced CANDU, ABWR and ESBWR.
Generation III+	Generation III+ designs offer significant improvements in safety and economics over Generation III advanced reactor designs certified by the

	NRC in the 1990s. The ACR-1000 and EPR designs are considered to be Generation III+ designs.
Generation IV	Generation IV reactors are a set of theoretical nuclear reactor designs that are currently being researched. An international task force known as the Generation IV International Forum is currently developing six such designs which are expected to be ready for deployment between 2020–2030.
GIS	Geographic[al] Information System which captures, stores, analyzes, manages, and presents data that are linked to location.
GPS	Government Procurement Service: An executive agency of the Cabinet Office with the objective of delivering savings in government and public sector spending through centralised procurement. Used by DECC and by the NDA for the procurement of services for certain projects.
Grant-in-aid	Money received from the Government to fund the NDA's remit.
Graphite	A form of carbon used in nuclear fission reactors to slow down (moderate) neutrons. It is generally constructed in the form of blocks or sleeves.
Gray	<p>Gray (Gy) is a unit of measurement for the absorbed dose. The absorbed dose was formerly measured in rads and 1 gray = 100 rads. See Absorbed Dose.</p> <p>When it comes into contact with matter, ionising radiation collides with the atoms comprising it. During these interactions, it releases a part or all of its energy. The absorbed dose (expressed in Gray) is defined by the ratio of this released energy over the mass of the matter. A Gray corresponds to one Joule of energy released in one kilogram of matter.</p>
Green Energy Certificate	Generators of electricity from renewable sources may be entitled to claim three types of Green Energy Certificate. The three types of certificate are: Renewables Obligation Certificates ('ROCs'), Levy Exemption Certificates ('LECs') and Renewable Energy Guarantees of Origin ('REGO').
Greenpeace	See NGO
GSC	Government Security Classification policy introduced on 2nd April 2014 replacing the previous Government Protective Marking Scheme (GPMS). It describes how HM Government classifies information assets to ensure they are appropriately protected. It applies to all information that government collects, stores, processes, generates or shares to deliver services and conduct business. This includes the critical national infrastructure and in particular the civil nuclear and defence sectors. The system also applies to private sector bodies which provide services to the public sector.
GTA	Government Technical Advisor
Guidance for Site Stakeholder Groups	NDA guidance, 'Authority's Guidance for Site Stakeholder Groups', Ref LAR3.0, 27 March 2009.
GW	Gigawatt, being one billion Watts.
GWh	Gigawatt hours, being one billion watt-hours.
HAL / Highly Active Liquor	Intermediary stage in the vitrification process at Sellafield. Strict limits are imposed on the amounts of HAL which can be stored. HAL consists of components of spent fuel other than Uranium (i.e. radioactive by-products) dissolved in concentrated Nitric Acid after separation by the PUREX process.

HALEF	Highly Active Liquid Effluent Facility: The HALEF is made of seismically qualified reinforced concrete and comprises a series of storage tanks used to store radioactive waste arising from nuclear processing operations.
Half life	The time that it takes for half of the atoms in a radioactive element to decay.
Harbour Empowerment Order	An Order issued under the Harbours Act 1964 allowing a company to establish its own Harbour.
Health Impact Assessment (HIA)	An assessment, usually carried out in advance of a particular project or course of action being approved, which seeks to analyse the likely impact on human health. The HIA should be used as a tool by decision-makers to determine alternatives which would have lesser impacts on health.
Health Physics	A field of science concerned with radiation physics and radiation biology with the goal of informing the safe use of ionising radiation. Health physicists principally work at facilities where radionuclides or ionising radiation are used or produced.
Heat Exchanger	Any device that transfers heat from one system to another without physical transfer of any matter. In a nuclear reactor, the heat exchanger transfers heat from the reactor cooling system to water that passes through the turbo generators to produce electricity.
Heavy water	Water enriched to contain significantly more than the natural proportions (one in 6,500) of heavy hydrogen (deuterium, D) atoms to ordinary hydrogen atoms. Heavy water, effective in slowing neutrons down and has a low probability of absorbing neutrons, is used as a moderator in some reactor designs e.g. CANDU.
HEP	Human Error Probability: Term used in safety engineering. Probability assigned to represent the likelihood that a human, usually the operator, fails to complete a particular action correctly.
HEU	Highly Enriched Uranium: Uranium that has been modified by increasing the concentration of the fissionable isotope U-235, containing 20% or more of the isotope Uranium-235. A quantity of HEU can be described in terms of either the total mass of all the Uranium isotopes, kg U, or as the mass of the fissile isotope Uranium-235, kg U 235. For example, 100kg U of 70% enriched HEU could also be described as 70kg U 235.
HEX tails	Types of uranic material arising from the Uranium enrichment process (part of the nuclear fuel production cycle).
High-enriched Uranium	See HEU.
Hinkley Point C	A proposed development by NNB GenCo (a subsidiary created by EDF Energy) for a new nuclear power station near Bridgwater, Somerset, England. The proposal is to develop two nuclear reactors capable of generating a total of up to 3,260MW of electricity based on AREVA's EPR design.
Hitachi	Hitachi Ltd is a Japanese multinational engineering and electronics conglomerate company headquartered in Tokyo, Japan. Hitachi completed the purchase of the shareholdings of E.ON and RWE npower in Horizon Nuclear Power joint venture on 26 November 2012, after announcing its intention to continue with the development of NPPs at Horizon Nuclear Power's development sites utilising ABWR technology.

HLW	<p>High-Level Waste: Radioactive wastes that are highly radioactive materials, usually produced as a by-product of reactions which occur inside nuclear reactors.</p> <p>HLW takes one of two forms:</p> <p>(a) Spent (used) reactor fuel when it is accepted for disposal; or</p> <p>(b) Waste materials remaining after spent fuel has been reprocessed.</p> <p>HLW is heat-generating and, as a result, the temperature of HLW can rise significantly over time. This has to be taken into account when designing storage or disposal facilities, for example those at Sellafield and Dounreay.</p>
HMG	Her Majesty's Government, the Government of the United Kingdom.
HNB	Hunterston B (Power Station)
Horizon Nuclear Power / HNP	<p>A UK energy company now owned by Hitachi (originally established as a joint venture between E.ON UK and RWE npower) involved in developing a programme for the construction of new nuclear power stations in the UK with a particular focus on sites at Wylfa (Isle of Anglesey) and Oldbury in Gloucestershire.</p> <p>On 29 March 2012, RWE npower and E.ON announced that they would no longer be proceeding with developing new nuclear generation in the UK. The shareholdings were purchased by Hitachi Ltd in a sale which completed on 26 November 2012.</p>
HP	Health Physics / Health Physicist
HPA	Health Protection Agency: An NDPB with a role to provide an integrated approach to protecting the UK public from threats to their health from infectious diseases, environmental hazards and radiation.
HPB	Hinkley Point B (Power Station)
HPC	<p>Hinkley Point C, the new nuclear build project being developed by NNB Genco in Somerset.</p> <p>May also refer to High Performance Computing.</p>
HRA	Hartlepool (Power Station)
HSE	<p>Health and Safety Executive: A statutory body whose role is the enforcement of work-related health and safety law under the general direction of the Health and Safety Commission established by the Health and Safety at Work Act 1974.</p> <p>The ONR is no longer an agency of the HSE but is now a completely independent public corporation. HSE will remain as the health and safety enforcement authority for the Associated Development sites under the Health and Safety at Work Act and the HSE has the right to nominate one non-executive director to the board of the ONR.</p>
HSWA	Health and Safety at Work Act 1974
HVLA	High Volume Low Activity (waste): A subset of LLW arising from decommissioning activities. Chemical properties of HVLA are such that it can potentially be disposed of to a lower level of containment than LLW.
HYA	Heysham A (Power Station)

HYB	Heysham B (Power Station)
I&C	Instrumentation and Control System: The collective term for all the electronics and measurement devices that together run a nuclear power plant.
IACC	Isle of Anglesey County Council: In March 2006, IACC voted to support the construction of Wylfa Newydd, a new build nuclear plant to replace the existing Wylfa A plant owned by the NDA and operated by Magnox. IACC also supports the development of the Anglesey Energy Island project.
IAEA	International Atomic Energy Agency: The Vienna-based IAEA (part of the United Nations) is the global focal point for nuclear co-operation and promotes the peaceful use of atomic energy. It gives guidance on nuclear safety and verifies that members comply with their safeguard obligations and use nuclear material only for peaceful purposes.
ICO	Intelligent Customer Organisation: Linked to license conditions, all nuclear operators must retain Controlling Mind regardless of what operations are outsourced. The suitably qualified and experienced personnel required to fulfil this need constitute the Intelligent Customer Organisation.
ICRP	International Commission on Radiological Protection: An independent registered charity established to advance for the public benefit the science of radiological protection, in particular by providing recommendations and guidance on all aspects of protection against ionising radiation.
IDAC	Interim Design Acceptance Confirmation (see DAC)
ILW	Intermediate Level Waste: Waste with radioactivity levels exceeding the upper boundaries for Low Level Waste ('LLW'), but which do not require temperature to be taken into account in the design of storage or disposal facilities. ILW arises mainly from the reprocessing of spent fuel, and from general operations and maintenance of radioactive plant. The major components of ILW are metals, sludges and organic materials, with smaller quantities of cement, graphite, glass and ceramics.
INES	International Nuclear Event Scale: A scale from 1 to 7 introduced by the IAEA in 1990 to assess and classify the impact(s) of nuclear accidents, where 1 is an anomaly and 7 is a major accident.
Initiating event	Term used in safety engineering to refer to an initiating cause, when assessing consequences and outcomes. An initiating event can be defined as a challenge to plant operation. Event Tree Analysis involves the analysis of initiating events and their consequences.
INPO	Institute of Nuclear Power Operations: A US based organisation promoting excellence in the operation of commercial nuclear power plants.
INS	International Nuclear Services Limited: A wholly-owned subsidiary of the NDA. INS was formerly known as Spent Fuel Services, an operating unit within British Nuclear Group. Its main focus continues to be the customer interface to over 20 utility customers for reprocessing and MOX fuel supply contracts and the associated transportation of these products.

INSAG-19	International Nuclear Safety Advisory Group – Report 19 ' <i>Maintaining the Design Integrity of Nuclear Installations throughout their Operating Life</i> ': Report published by the IAEA through INSAG discusses the problem of maintaining the integrity of the design of a nuclear power plant over its entire lifetime in order to achieve a continuous high level of safety. The purpose of this report is to identify the issues and some of the principles that should be addressed, discuss some of the solutions to the problem and define the specific responsibilities of designers, operators and regulators.
Intelligent Customer	Part of an organisation's overall attributes which enables it to minimise any risks to nuclear safety in all aspects of its undertaking.
Interim Spent Fuel Store	A store where spent fuel cools until it is suitable for disposal or where such fuel is stored pending disposal.
Ion	An ion can be described as an atom that has too many or too few electrons, causing it to have an electrical charge, and therefore, be electrochemically active.
Ionisation	The process of adding or removing one or more electrons from atoms or molecules, thereby creating ions. Ionisation can occur because of high temperatures, electrical discharges, or nuclear radiations.
Ionising radiation	Any radiation capable of displacing electrons from atoms or molecules, thereby producing ions. High doses of ionising radiation may produce severe skin or tissue damage. Some examples are alpha, beta, gamma, x-rays, neutrons, and ultraviolet light.
IOSH	Institution of Occupational Safety and Health
IPC	The Infrastructure Planning Commission, which is now abolished. The IPC was set up under the Planning Act 2008 to determine applications for DCOs for Nationally Significant Infrastructure Projects. It was abolished under the Localism Act 2011 and the powers to determine DCOs returned to the relevant Minister i.e. DECC in the case of nuclear power stations and major overhead grid connections.
Irradiation	This is the process by which an item is exposed to radiation.
IRT	Incident Response Team.
ISoDA	Interim Statement of Design Acceptability (see SoDA)
Isotope	Atoms of the same element which have the same number of protons but different numbers of neutrons. Hydrogen has three isotopes – all with one proton but with zero (normal hydrogen), one (deuterium) or two (tritium) neutrons in the nucleus. Similarly the two common isotopes of Uranium, ^{235}U and ^{238}U both have 92 protons in their nuclei but $(235-92)=143$ or $(238-92)=146$ neutrons respectively.
ITER	Originally the International Thermonuclear Experimental Reactor, this is an international tokamak research/engineering project that could help to make the transition from today's studies of plasma physics to future electricity-producing fusion power plants. ITER is based on the 'tokamak' concept of magnetic confinement, in which the plasma is contained in a doughnut-shaped vacuum vessel. The fuel (a mixture of Deuterium and Tritium, two isotopes of Hydrogen) is heated to temperatures in excess of 150 million °C, forming hot plasma. Strong magnetic fields are used to keep the plasma away from the walls; these are produced by superconducting coils surrounding the vessel, and

	by an electrical current driven through the plasma. The project aims to demonstrate that it is possible to produce commercial energy from fusion.
IUK	The Infrastructure UK Unit within HM Treasury who administer IUK Guarantees
IUK Guarantee	A guarantee issued by HM Treasury of the principal debt and interest of a developer of certain significant UK infrastructure projects.
IWS or Integrated Waste Strategy	Integrated Waste Strategy: Describes how a site optimises its approach to waste management. It includes the waste streams and discharges expected from current and future operations at the site, and the actions required to improve the site's approach to waste management.
JET	The Joint European Torus fusion research project based at Culham and operated by United Kingdom Atomic Energy Authority on behalf of Euratom.
Judicial Review	The process by which decisions of public bodies including Regulators can be challenged in Court.
Justification	The process by which a Regulator confirms that a new practice involving potential radiation exposure is justified in relation to any health detriment caused. Also known as the first radiation protection principle.
KA-CARE	King Abdullah City for Renewable and Atomic Energy: The lead institution in the nuclear programme for the Kingdom of Saudi Arabia.
KEPCO	Korea Electric Power Corporation
KI	Potassium Iodate (Tablets)
Kinetic energy	The kinetic energy of an object is the energy it possesses because of its motion. It is calculated by virtue of its mass and velocity and is equal to half its mass times its velocity squared. Kinetic energy of atoms or molecules increases with temperature as the heat (energy) transferred into the substance is converted into kinetic energy with resulting increase in the velocities of the particles.
KM	Knowledge Management: The IAEA defines KM as: <i>"An integrated, systematic approach to identifying, acquiring, transforming, developing, disseminating, using, and preserving knowledge, relevant to achieving specified objectives."</i>
KNOO	Keeping the Nuclear Option Open: A programme of work involving industry, academia and Government, with Research Council funding, carried out during the period 2005 - 2010.
KW	Kilowatt, being one thousand Watts.
LC	Licence Condition, see Site Licence.
Legacy	The nuclear legacy is represented by: <ul style="list-style-type: none"> (a) the nuclear sites and facilities operated by 'UKAEA' and 'BNFL' which were developed between the 1940s and the 1960s, including the wastes, materials and spent fuels they produced; and (b) the Magnox fleet of nuclear power stations designed and built in the 1960s and 1970s and operated on the Government's behalf by 'BNFL', and the plant and facilities at Sellafield used for the reprocessing of Magnox fuel as well as all associated wastes and materials.

Lethal dose ('LD')	A lethal dose of radiation is the dose required to cause death to 50 percent of an exposed population within 30 days (LD 50/30). Typically, the LD 50/30 is in the range from 400 to 450 rem (4 to 5 Sieverts) received over a very short period. Duration of the exposure is important here as the dose received by patients in radiotherapy treatments can reach 20 Sv over time.
Levy Exemption Certificates ('LEC's')	One of the three types of Green Energy Certificate that generators of electricity from renewable sources may be entitled to claim. LECs can be sold to suppliers who use them to prove that they have supplied non-domestic customers with renewable energy.
Liabilities	The costs involved in decommissioning; the processing, long term management, storage and final disposal of waste materials and spent fuel; and the environmental remediation of nuclear sites.
Licensed Site	A site in respect of which a Nuclear Site Licence has been granted.
Licensee	A person to whom a Nuclear Site Licence has been granted.
Lifetime	The time period during which a nuclear power station is licensed to operate.
Lifetime Dose	Total radiation exposure of an individual over his or her lifetime.
Lifetime Extension	Agreement by the Regulator for a nuclear power station to extend its Lifetime.
Light water	Naturally occurring water (which is predominantly protium isotope) as distinguished from heavy water (i.e. enriched in deuterium isotope) or tritiated water (enriched in tritium isotope).
Light water reactor	Light water reactors use ordinary water as both a moderating material and a reactor coolant. It includes boiling water reactors ('BWR's) and pressurised water reactors ('PWR's), the most common types used throughout the world.
LLW	<p>Low-Level Waste: Waste which includes metals, soil, building rubble and organic materials, arising principally as lightly contaminated miscellaneous scrap. Wastes other than those suitable for disposal to landfill, but generally not exceeding 4 GBq/te (gigabecquerels / tonne) of alpha or 12 GBq/te of beta/gamma activity.</p> <p>Metals are mostly in the form of redundant equipment or from decommissioning of radioactive / nuclear facilities.</p> <p>Organic materials are mainly in the form of paper towels, clothing and laboratory equipment that have been used in areas where radioactive materials are used – such as hospitals, research establishments and general industry as well as the nuclear industry. The National Repository for LLW is near Drigg, Cumbria.</p>
LLWR	Low Level Waste Repository: The UK's national repository near Drigg in Cumbria.
LMU	Liabilities Management Unit: A unit set up within the DTI (Department of Trade and Industry, now BIS) to strengthen its ability to drive forward work on the nuclear legacy and help to prepare the ground for the NDA. (For more information see the White Paper – Managing the Nuclear Legacy.)
LoC	Letter of Compliance: Written advice issued by Radioactive Waste Management Limited (RWM) following a Disposability Assessment which confirms that RWM considers that a proposed waste package would be

	suitable for geological disposal.
LOCA	A Loss-of-Coolant Accident is a mode of failure for a nuclear reactor; if not managed effectively, the results of a LOCA could result in reactor core damage. Each nuclear plant's emergency core cooling system (ECCS) exists specifically to deal with a LOCA.
LOHA	Location Occupational Health Advisor
London Convention 1972	Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972.
Low Enriched Uranium or LEU	Enriched Uranium that contains less than 20% of Uranium-235.
LR	Learning Report
LTP	Lifetime Plan: A document describing the totality of the activities in terms of scope, schedule and cost to be undertaken at each site to transition from the current state to the proposed End State. Submitted annually from the sites to the NDA.
M&O (Contract)	The contract in place between an SLC and the NDA regarding all aspects of the day to day management and operation of the NDA sites.
Magnox	First generation UK reactor, so called because of the non-oxidising magnesium alloy cladding used to contain uranium fuel rods. Not to be confused with Magnox Limited – the SLC carrying out operations on behalf of the NDA at various nuclear sites.
Maintenance Schedule	Identifies the requirements and periodicities for regular and systematic examination, inspection, maintenance and testing of all plant performing a safety function. Refer to "Site Licence Conditions", LC28.
Mass number	The number of protons plus neutrons in the nucleus of an atom. Symbol A.
MBC	Media Briefing Centre
MBUNS	Manual Backup Notification System
MDC	Medical Decontamination Centre
MEBs	Multi Element Bottles: Used to store light water reactor spent fuel assemblies in Thorp storage ponds.
MECC	Mobile ECC
Megawatt	Equal to one million watts, the productive capacity of electrical generators operated by a utility company is often measured in megawatts.
MELOX	The AREVA MELOX plant, situated in the regional department of Gard (France), produces MOX fuel assemblies intended to power light-water reactors in different countries. MELOX is the world leader in this market, with more than 1,500 metric tons of MOX fuel produced since the plant started operation.
Metal Fuels	Fuels using natural uranium metal, as used in early gas-cooled reactors like Magnox.
Milling	Process by which minerals are extracted from ore, usually at the mine site, to produce a mineral concentrate for sale.

MMO	<p>Marine Management Organisation: Established by Part I, Chapter I of the Marine and Coastal Access Act 2009 to make a contribution for sustainable development in marine areas. The MMO assumed much of the work of the Marine and Fisheries Agency and also acquired new roles previously associated with DECC and the Department for Transport. The MMO is responsible for implementing parts of the marine planning and licensing system, responding to emergencies affecting marine areas, and working closely with Natural England to create and manage a network of marine protected areas.</p> <p>Please however note that marine regulation and licensing has been devolved in Scottish inshore and offshore waters to the Scottish Executive (Marine Scotland), in Welsh inshore waters to Welsh ministers (Marine Consents Unite) and in Northern Ireland's waters to the Northern Ireland Executive (Department for the Environment).</p>
Moderator	A substance which slows neutrons down in a 'thermal' reactor to enable fission to take place. The term "thermal" refers to the energy of the neutrons after moderation (slowing). See "Kinetic Energy" for a little more explanation.
MOF / MOLF	Marine Off-Loading Facility: A jetty or harbour built at the site of a NPP for the delivery of materials and construction components.
MOI	Mobile Operating Interface
Molecule	The smallest portion of a substance that can exist by itself and retain the properties of the substance. Molecules consist of multiple atoms and a particular molecule has a specific number of atoms arranged in a specific way. Water is a molecule consisting of two hydrogen atoms and one oxygen atom – the hydrogen atoms are bound to opposite sides of the oxygen atom with an angle of about 104.5° between the two hydrogen atoms.
Monitoring	The measurement of radiation levels, concentrations, surface area concentrations or quantities of radioactive material and the use of the results of these measurements to evaluate potential exposures and doses.
MOS	Monitoring Outstation
MOX Fuel	Mixed Oxide Fuel: A blend of oxides of plutonium and natural uranium, reprocessed uranium, or depleted uranium which behaves similarly (though not identically) to the low enriched uranium feed for which most nuclear reactors were designed. MOX fuel is an alternative to low enriched uranium fuel used in the light water reactors that predominate nuclear power generation.
MRWS	Managing Radioactive Waste Safely
MTPAS	Mobile Telephone Preference Access Service
Multi Package Contract	Under a multiple package contract (often referred to in the UK as 'multi-contracting' or 'construction management'), the plant owner, with the assistance of an Architects Engineer ('A/E') (or construction manager) and other consultants, assumes overall responsibility for managing the design and construction of the project.
MW	Megawatt, being one million Watts.
MWe	Megawatt electrical: Unit of electrical power produced.
MWth	Megawatt thermal: Unit of thermal power produced.

NAIR	National Arrangements for Incidents Involving Radioactivity
NAMRC	The Nuclear Advanced Manufacturing Research Centre works with companies along the UK civil nuclear manufacturing supply chain, combining the manufacturing and engineering expertise of the University of Sheffield with the nuclear and materials capacity of Dalton Nuclear Institute at the University of Manchester.
NAO	National Audit Office: The NAO audits most public-sector bodies in the UK (including the NDA) and produces value-for-money reports into the implementation of Government policies.
National Waste Research Forum	The SLC-led forum for sharing common research and development needs, risks and opportunities.
Natural Uranium	This refers to the properties of naturally-occurring Uranium as found in natural sources. It contains 0.7 percent Uranium-235, 99.3 percent Uranium-238, and a trace of Uranium-234 by weight. In terms of the amount of radioactivity, it contains approximately 2.2 percent Uranium-235, 48.6 percent Uranium-238, and 49.2 percent Uranium-234.
NDA	Nuclear Decommissioning Authority: A non-departmental public body (NDPB) set up in 2005 by the Energy Act 2004 to oversee the decommissioning and clean-up of the UK's designated civil nuclear legacy. Its sponsoring department is DECC. Can also mean Non-Disclosure Agreement.
NDA Properties Limited	The wholly owned subsidiary of NDA associated with its property and management activities.
NDA sites	Berkeley, Bradwell, Calder Hall, Capenhurst, Chapelcross, Dounreay, Dungeness A, Harwell, Hinkley Point A, Hunterston A, LLWR (near Drigg), Oldbury, Sellafield, Sizewell A, Springfields, Trawsfynydd, Winfrith and Wylfa.
NDPB	Non-Departmental Public Body: A body which has a role in the process of national Government, but is not a Government department or part of one, and which accordingly operates to a greater or lesser extent at arm's length from Ministers. More simply, this means a national or regional public body, operating independently of Ministers, but for which Ministers are ultimately responsible.
NEA	OECD Nuclear Energy Agency: A specialised agency within the OECD. The mission of the NEA is to assist its Member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for the safe, environmentally friendly and economical use of nuclear energy for peaceful purposes.
NEBOSH	National Examination Board in Occupational Safety and Health
NEPD	Nuclear Emergency Planning Delivery Committee
NEPLG	Nuclear Emergency Planning Liaison Group is a forum under the chairmanship of DECC of a wide range of organisations with interests in off-site planning for an emergency at a civil or defence nuclear site. In 2012 NEPLG was incorporated into the Nuclear Emergency Planning Delivery Committee and its associated working groups.
NESA	Nuclear Energy Skills Alliance: A collaboration between skills bodies to ensure a joint approach to addressing the breadth of skills challenges across the nuclear programme. Members include: CSkills, Cogent SSC,

	ECITB, NSA Nuclear, Semta SSC, DECC, BIS and HEI representation.
Neutron	An uncharged atomic particle found in the nuclei of atoms, which can cause fission in some atoms.
Neutron flux	This term refers to the number of neutrons passing through an area over a span of time. It is a measure of the intensity of neutron radiation, which is measured in neutrons/cm ² -sec.
Neutron source	This is a general term referring to the variety of materials that emit neutrons. An example of which is a mixture of radium and beryllium, that can be inserted into a reactor to ensure a neutron flux large enough to be distinguished from background radiation on neutron detection equipment.
New Build Utilities	There are three nuclear new build utilities in the UK which are: NNB GenCo with plans to build 6.4GW of new nuclear, NuGeneration Ltd who are planning 3.6GW capacity and Horizon Nuclear Power, now owned by Hitachi Ltd, which plans to develop between two and three ABWRs at each of its sites.
NEWS	<p>Nuclear Events Web-based System: A system run jointly by the IAEA, the NEA and WANO. The purpose of NEWS is to provide fast, flexible and authoritative information on the occurrence of nuclear events that are of interest to the international community.</p> <p>NEWS has been established to cover all significant events in nuclear power plants, research reactors, nuclear fuel cycle facilities and occurrences involving radiation sources or the transport of radioactive material.</p>
NGO	Non-Governmental Organisation: Independent pressure groups often adopting a strong stance for campaigning against nuclear power. Government decisions (policy or otherwise) to pursue nuclear projects are often met with resistance from NGOs and are regularly challenged in the courts by way of Judicial Review. Prominent anti-nuclear NGOs include Friends of the Earth and Greenpeace.
NGR	National Grid Reference
NI	See Nuclear Institute.
NIA	Nuclear Installations Act 1965
NIA	<p>Nuclear Industry Association is the trade association and representative voice of Britain's civil nuclear industry. It represents more than 270 companies including the operators and vendors of nuclear power stations, those engaged in decommissioning, waste management, nuclear liabilities management and all aspects of the nuclear fuel cycle, nuclear equipment suppliers, engineering and construction firms, nuclear research organisations, and legal, financial and consultancy companies.</p> <p>http://www.niauk.org/</p>
NIA65	See Nuclear Installations Act 1965
NIAS	Nuclear Industry Airwave Signal
NIC	The Nuclear Industry Council
NII	Nuclear Installations Inspectorate, whose functions are now within the Office for Nuclear Regulation (ONR).
NIRAB	Nuclear Innovation Research Advisory Board, established by UK Government as part of the Nuclear Industrial Strategy in 2013. NIRAB is

	made up of nuclear research experts from across industry, academia and Government and has the remit to advise Government on priorities for UK nuclear R&D and innovation required to underpin policy.
NIREX	Nuclear Industry Radioactive Waste Executive: The company established to manage the long-term disposal of ILW arising from nuclear waste management and decommissioning. In October 2006 the Government announced that the functions of Nirex would transfer to the NDA. The integration of Nirex into the NDA was completed on 2 April 2007 and now forms part of the Radioactive Waste Management Directorate.
NIRO	Nuclear Innovation & Research Office: A small team, hosted in NNL, which will develop and take forward the work of the NIRAB in helping to define a national programme of nuclear energy R&D for the UK.
NISR	The Nuclear Industries Security Regulations 2003: The NISR provide for the security regulation of the UK civil nuclear sector. In particular, the NISR define the term “nuclear material” for the purposes of the Anti-Terrorism, Crime and Security Act 2001.
NLFAB	Nuclear Liabilities Financing Assurance Board: DECC has created an independent board to provide impartial scrutiny and advice on the suitability of the Funded Decommissioning Programme (‘FDP’), submitted by operators of new nuclear power stations. The Board will advise the Secretary of State on the financial arrangements that operators submit for approval, and on the regular review and on-going scrutiny of funding. NLFAB has robust powers to protect the funds supporting operators’ FDPs.
NNA	National Nuclear Archive: A project funded by the Nuclear Decommissioning Authority to build a new purpose-built archive facility at Wick to provide long-term storage of records and other archive material from civil nuclear sites in the UK from 2016.
NNB GenCo	Nuclear New Build Generation Company Limited (company number 06937084) is the holding company responsible for the development of the project at Hinkley Point C. NNB Generation Company Limited is wholly owned by EDF Energy.
NNL	The UK’s National Nuclear Laboratory, owned and managed by UK Government. NNL operates on a number of sites – mainly in the North West of England – including Sellafield and Springfields. NNL is a leading nuclear technology services provider, which operates as a commercial business – competing for and delivering work for paying customers. The company has experience all across the fuel cycle and specialises in providing customers with tailored solutions by applying the right level of technical innovation and intellectual support.
No Harm Threshold	The risk of death of 1 in 1 million per annum which is generally considered in the radiation protection community as equating to a dose of 10 micro Sieverts.
NORM	Naturally-Occurring Radioactive Materials: Materials found naturally and are often found in the wastes arising from the oil, gas and mining industries.
Notification	An alert provided to national or international contacts providing details of a nuclear emergency or potential nuclear emergency.
NPDUK	Nuclear Power Delivery UK is the partnership team between Westinghouse, Shaw Group, Laing O’Rourke and Toshiba, working to deliver the AP1000 nuclear power reactor to the UK.
NPE	Nuclear Pressure Equipment

NPP	<p>Nuclear Power Plant:</p> <ol style="list-style-type: none"> 1 A nuclear reactor or reactors together with all structures, systems and components necessary for the safe generation of electricity and/or heat. 2 An electrical generating facility using a nuclear reactor as its heat source to provide steam to a turbine generator.
NPS	<p>National Policy Statements are documents issued by the Secretary of State setting out national policy in relation to one or more specified descriptions of NSIP development. There is an overarching Energy NPS (EN-1). The others relate to specific areas, for example, the Nuclear Power Generation NPS (EN-6).</p> <p>There are 12 designated or proposed NPSs in total. Of these, 7 have been designated by Parliament.</p>
NRC	Nuclear Regulatory Commission: The US equivalent of the ONR.
NRPB	The National Radiological Protection Board was a public authority in the UK created by the Radiological Protection Act 1970. In 2005 NRPB was amalgamated into the Centre for Radiation, Chemicals and Environmental Hazards (CRCE) which is a division of the HPA.
NSAN	National Skills Academy for Nuclear: An employer-led organisation established to ensure that the UK Nuclear Industry and its Supply Chain has the skilled, competent and safe work-force it needs to deal with the current and future UK nuclear programme, including all sub-sectors. The Skills Academy is 'The lead strategic body that represents the industry to stimulate, coordinate and enable excellence in skills to support the nuclear programme.' www.nuclear.nsacademy.co.uk
NSAN-M	National Skills Academy Nuclear Manufacturing is an Expansion to the remit of NSA Nuclear to ensure the skills needs for manufacturing in the nuclear supply chain are addressed. This is in partnership with Semta SSC and Nuclear AMRC to ensure a 'one stop shop' for manufacturing nuclear skills development
NSC	Nuclear Safety Committee: A specific requirement for licensee's compliance to Licence Condition (LC) 13. The purpose of this condition is to ensure that the licensee sets up a nuclear safety committee (NSC) which can consider and advise on all matters which may affect safety on or off the licensed site. The committee must have members who are adequately qualified to perform this task and to provide a source of authoritative advice to the licensee.
NSIP	<p>Nationally Significant Infrastructure Project: These are large infrastructure projects specified in the Planning Act 2008 such as new nuclear power stations. Other developments that can be a NSIP include; other power stations (including offshore wind farms), gas storage facilities, energy transmission systems, energy from waste projects, road, port, airport, reservoirs and major waste water treatment plants and water transfer schemes.</p> <p>Applications relating to an NSIP are made to the Secretary of State for a Development Consent Order ('DCO') which replaces the old regime of applications for Section 36 Consents under the Electricity Act 1989 (although this remains for some applications which fall outside of the NSIP regime). DCOs bring together a number of different planning and consenting regimes including planning permission, compulsory purchase powers, the diversion or stopping up of rights of way and marine licences.</p>

	<p>The individual scheme promoter engages in significant community and stakeholder consultation before making its formal application to the Secretary of State, who will decide whether or not to grant development consent in accordance with relevant designated National Policy Statements (NPSs).</p> <p>The Secretary of State determines the proposal after the examination of the NSIP application by an examiner (or examiners), appointed by the Planning Inspectorate on behalf of the Secretary of State. That examination process is principally made up of the submission of written representations, but can also include hearings before the examiner(s). The Secretary of State's decisions are open to legal challenge.</p>
NSP	<p>Nuclear Skills Passport: A highly secure web based platform that can be used to record and demonstrate the achievement of nationally agreed and recognised skills and training standards as a tool to drive performance improvement and support transferability and mobility of the workforce.</p> <p>www.nuclearskillspassport.co.uk</p>
NSSS	<p>Nuclear steam supply system: That part of an NPP which incorporates the nuclear heat source, the heat transport system and other systems directly connected to the NSSS. Usually referred to as "N-triple S".</p>
NTN	<p>Nuclear Training Network: An online learning portal for the Nuclear Industry where employers and providers can share and enable access to training resources.</p> <p>www.nucleartrainingnetwork.com</p>
Nuclear Concrete	<p>Concrete for the construction of the nuclear island, usually a key Regulatory Hold Point.</p>
Nuclear Energy	<p>The energy released by a nuclear reaction (either fission or fusion) or by radioactive decay.</p>
Nuclear Fuel	<p>Uranium or plutonium which has been fabricated into pins, assemblies, plates, or other such similar form for the purposes of fuelling a nuclear reactor. Other High-Z elements are capable of being used as nuclear fuel (e.g. thorium). For fusion reactors.</p>
Nuclear fuel cycle	<p>See Fuel Cycle.</p>
Nuclear Installations Act 1965	<p>The Nuclear Installations Act 1965: The NIA 1965 is the principal piece of UK legislation implementing the Paris Convention and Brussels Convention in the UK and sets out statutory provisions for nuclear liability and licensing of nuclear installations.</p>
Nuclear Institute	<p>Created on the 1 January 2009 from the merger of the British Nuclear Energy Society and the Institution of Nuclear Engineers. The Nuclear Institute is a charity, professional institute and a learned society. The Institute offers a range of memberships from professorial level to layperson with an interest in nuclear matters.</p>
Nuclear Island	<p>Nuclear Island: That part of an NPP which incorporates all equipment, systems, installation and control and other relevant hardware installed within the reactor and reactor auxiliary buildings. The boundaries of the NI are normally defined as being one metre outside the external boundaries of the above mentioned buildings in the case of piping and two metres for cable.</p>

	An NPP is divided into two main parts i.e. the nuclear island and the conventional island. The nuclear island is further sub-divided into the NSSS and the balance of nuclear island i.e. everything else that needs to be designed, constructed and tested to complete the nuclear island.
Nuclear Liability	The strict legal liability of a Licensee for all nuclear damage as defined under the Nuclear Installations Act 1965.
Nuclear Lifecycle	A whole lifecycle approach to a nuclear power project consisting of several phases: R&D, Conceptual Design, Detailed Design, Construction, Commissioning, Operations and Maintenance, Refurbishment or Life Extension (if applicable) and Decommissioning.
Nuclear Non-Proliferation	A process by which the spread of nuclear weapons technology is prevented. See also the Treaty on the Non-Proliferation of Nuclear Weapons.
Nuclear Reactor	<p>1 A device in which nuclear fission may be sustained and controlled in a self-supporting nuclear reaction. The varieties are many, but all incorporate certain features, including fissionable material or fuel, a moderating material (unless the reactor is operated on fast neutrons), a reflector to conserve escaping neutrons, provisions of removal of heat, measuring and controlling instruments, and protective devices. The reactor is the heart of a nuclear power plant.</p> <p>2 A device in which a fusion chain reaction can be initiated, maintained, and controlled. Its essential components are fuel, shielding, and coolant. There are different approaches to fusion of which ITER, being a development of the JET reactor at Culham and the US' National Ignition Facility at the Lawrence Livermore National Laboratory are two leading different approaches.</p>
Nuclear Safety	The protection of people and the environment from the harmful effects of ionising radiation.
Nuclear Safety Culture	Nuclear Safety Culture: IAEA Safety Series No75-INSAG-4 Safety Culture defines NSC as "that assembly of characteristics and attitudes in organisations and individuals which establishes that, as an overriding priority, nuclear plant safety issues receive the attention warranted by their significance".
Nuclear Site Licence	See "Site Licence".
Nuclear Supply Chain	The system of organisations, people, technology, activities, information and resources involved in moving nuclear energy from generator/supplier to customer.
Nuclear Waste	A particular type of radioactive waste that is produced as part of the nuclear fuel cycle. Radioactive waste is a broader term that includes all waste that contains radioactivity. Nuclear waste is produced as a result of the activities needed to produce nuclear fission. These include extraction of Uranium from ore, concentration of Uranium, processing into nuclear fuel, and disposal of by-products.
Nucleargraduates Programme	Established by the NDA and supported by a range of employers the Nucleargraduate programme is for those looking to enter the nuclear industry but wishing to work with a variety of employers in the sector to develop a broad knowledge and understanding of the sector through a range of placements.

Nucleus	The core of an atom, occupying little of the volume, containing most of the mass, and bearing positive electric charge. It consists of protons and neutrons with the number of protons defining the identity of the element. Different isotopes of the same element have (by definition) the same number of protons but differ in the number of neutrons in the nucleus.
NuGen	NuGeneration Limited: A UK nuclear company taking forward plans to build up to 3.6GW of new nuclear as part of its Moorside project North and West of the Sellafield complex in West Cumbria. NuGen is a joint venture between Toshiba (60%) and GDF SUEZ (40%). The project contains plans for three Westinghouse AP1000 reactors to be built on the site, with the first reactor on-line by 2024. Technology provider Westinghouse will deliver the reactors via an EPC contract to owners Toshiba & GDF SUEZ.
NuScale	USA based vendor of SMR technology rated at 45 MWe.
OCC	Outage Control Centre
OCNS	Formerly Office for Civil Nuclear Security: It was a unit within HSE which regulated security arrangements in the civil nuclear industry, including security of nuclear material in transit, exercising statutory powers. This was primarily in order to protect against the threats of terrorism and nuclear proliferation. The OCNS is now part of the Office for Nuclear Regulation and its responsibilities fall under the Office for Nuclear Regulation Civil Nuclear Security (CNS).
OECD	Organisation for Economic Cooperation and Development: An international organisation of 34 countries helping governments tackle the economic, social and governance challenges of a globalised economy.
Off the Bars	When a nuclear power station is not generating electricity.
Off-site release	Postulated outcome in safety engineering. Release of radioactivity which leaves the site boundary.
OJEU	Official Journal of the European Union: All procurement in the public sector is subject to EC Treaty principles of non-discrimination, equal treatment and transparency. The EC Public Procurement Directives require contracting authorities, such as NDA, to provide details of procurements in a prescribed format, which are then published in the OJEU.
OL	Organisational Learning
Oikiluoto	Site of a new EPR reactor being built in Finland owned by TVO (Teollisuuden Voima Oyj). TVO operates two existing reactors at the site and in addition to the EPR a fourth reactor is to be built there although the timing for decisions on this has slipped.
OND	Office for Nuclear Development: Part of DECC, its remit is to facilitate new nuclear investment in the UK to: <ul style="list-style-type: none"> (a) enable operators to build and operate new nuclear power stations in the UK from the earliest possible date and to enable new nuclear to make the fullest contribution it is capable of, with no public subsidy, and with unnecessary obstacles removed; (b) build and maintain the UK as the best market in the world for companies to do business in nuclear power; (c) create and support a globally competitive UK supply chain, focusing on high value added activities to take advantage of the

	<p>UK and worldwide nuclear programme; and</p> <p>(d) to support and advise the Secretary of State on nuclear safety, security and safeguards, ensure continued progress with waste management and decommissioning and to implement the Governments Global Threat Reduction Programme (non-proliferation).</p> <p>It was created by John Hutton in 2008 and was the first of the “Offices” in the energy policy area. The founding Chief Executive was Mark Higson and the Expert Chair was Dr Tim Stone CBE. The team has keenly maintained the word “for” in its title rather than the more conventional “of”.</p>
ONR	<p>The Office for Nuclear Regulation was established in April 2011 to replace the NII and is responsible for all nuclear sector regulation across the UK. The ONR is no longer an agency of the Health and Safety Executive and is now a public corporation.</p> <p>ONR is the regulatory and enforcing authority on GB nuclear sites with a scope of: nuclear safety, conventional safety, security, safeguards, and transport.</p> <p>ONR was created following the recommendations of the Stone Review commissioned in 2008 by John Hutton as Secretary of State for BERR.</p>
ONR Security Policy Framework	ONR security requirements for the protection of Sensitive Nuclear Information and personnel security in the civil nuclear industry Reference TRIM Ref:4.4.2.4890.SB1/6.
Operation and Maintenance Costs	The operational costs of running a nuclear power plant excluding fuel and any capital costs.
OPEX	Operational Experience
Optimisation	The process of ensuring that radiation protection measures are as effective as possible. Also known as the second radiation protection principle.
Orphan Source	A radioactive source that is not under the control of a Licensee.
OSPAR	Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic: The OSPAR Convention impacts on the disposal of liquid effluent into the marine environment.
Outage	Period of reactor shutdown. Can be planned or unplanned. Many reactor types can only be refuelled on outage.
Outage	A period of maintenance during which a nuclear power station ceases to generate electricity.
Oxide Fuels	Enriched or natural uranium in the form of oxide UO ₂ , or Mixed Oxide (MOX) used in many types of reactor. Pure metal fuels can also be used in other reactor designs (e.g. Magnox).
Packaging	<p>Fuel packaging: A special way of processing spent fuel for temporary storage or final disposal.</p> <p>Waste packaging: An operation whereby waste is converted into a form suitable for transportation and/or storage and/or final disposal.</p> <p>(e) Very low-level radioactive waste (vinyl, cleaning rags, etc.) is placed in steel drums.</p> <p>(f) Low- and intermediate-level waste is first compacted to reduce its volume as far as possible, then encapsulated in a special material (concrete, bitumen or resin matrix) to form solid blocks capable of</p>

	<p>withstanding all environmental conditions.</p> <p>(g) High-level waste is placed in a glass mixture (vitrification process). Once vitrified, the waste is placed in stainless steel canisters.</p>
Paris Convention	<p>The main international convention on third party nuclear liability alongside the Brussels Convention. The Paris Convention provides for compensation for injury to or loss of life of any person, and for damage to, or loss of any property caused by a nuclear accident in a nuclear installation or during the transport of nuclear substances to and from installations. It does not cover damage to the nuclear installation itself.</p> <p>The principles of the Paris Convention are implemented into UK law by the Nuclear Installations Act 1965.</p>
PAS	Public Address System ("Tannoy")
Passively safe	A passively safe facility can be safely shut down automatically – without any operator intervention and without any external power supply from the grid or from backup generators to drive instruments or equipment. Following the disaster at Fukushima this has attracted greater attention.
PAWB	People Against Wylfa B, see NGO (note that Wylfa B is now known as Wylfa Newydd – see below)
PBA	Parent Body Agreement: The contract between the NDA and the PBO.
PBI	Performance Based Incentives: Contractual figures which include Performance-Based Incentives, Key goals, objectives, targets or milestones agreed at the beginning of a financial year and of sufficient importance to warrant incentivisation (typically through a fee) to motivate the contractor to achieve.
PBO	<p>Parent Body Organisation: The shareholder of the relevant SLC which is incentivised by the NDA to achieve 'more decommissioning for less'.</p> <p>The principal roles of the PBO are:</p> <ul style="list-style-type: none"> (a) to hold shares in the SLC; (b) to second staff to the SLC; (c) to provide normal parent company functions; and (d) to improve the capability and performance of the SLC. <p>The current PBOs are:</p> <ul style="list-style-type: none"> (a) Nuclear Management Partners, a partnership comprising AMEC, AREVA and URS (holding shares in Sellafield Limited); (b) Energy <i>Solutions</i> EU Limited (holding shares in Magnox Limited); (c) Dounreay Partnership, a partnership comprising Babcock Nuclear Services Limited, CH2M Hill and URS Holdings Limited (holding shares in Dounreay Site Restoration Limited); (d) Westinghouse Electric UK Limited, now part of the Toshiba Group (holding shares in Springfields Fuels Limited); (e) UK Nuclear Waste Management Limited (holding shares in LLW Repository Limited); and (f) UKAEA Limited, now part of Babcock International Group Plc

	(holding shares in Research Sites Restoration Limited).
Period of Responsibility	The period from the date a Nuclear Site Licence is granted to the date the ONR provides written confirmation that the activities for which the licence was required have ceased and the site has reached the No Harm Threshold required for de-licensing, whether or not the Nuclear Site Licence has already been surrendered or revoked.
PETIS	Public Emergency Telephone Information System
PHE	Public Health England (formerly HPA/NRPB)
PHWR	Pressurised Heavy Water Reactor: A reactor type which uses natural uranium as its fuel and heavy water as the coolant e.g. CANDU. The Canadian CANDU design is the most common example.
Physical Protection	Measures taken to prevent unauthorised access to nuclear material.
Pig	A US colloquialism describing a container used to ship or store radioactive materials. The thick walls of this shielding device, which are usually made of lead or depleted Uranium, protect the person handling the container from radiation. Large containers used for spent fuel storage are commonly called casks. Also an implement used for cleaning rust and alien substances from a piping system.
Pile	A term that was used to describe the first nuclear reactors – the ‘Windscale Piles’ situated at the modern-day Sellafield site. They were called piles because the earliest reactors were ‘piles’ of graphite and Uranium blocks. On 10 October 1957, the core of the Unit 1 reactor caught fire and released a large amount of radioactive into the air, notably isotope iodine-131. The ‘Windscale Fire’ remains the UK’s worst nuclear incident, classified as level 5 on the INES.
PIOI	Plant Item Operating Instruction
Planning Act 2008	Act of Parliament which, amongst other things, establishes the new regime for the consenting of Nationally Significant Infrastructure Projects (NSIPs) and introduces National Policy Statements (NPSs).
PLO	Police Liaison Officer
Plutonium (Pu)	A heavy, radioactive, manmade metallic element with atomic number 94. There are thirteen known isotopes of plutonium, the most important of which in the nuclear industry is isotope Pu-239 which undergoes fission with slow-moving neutrons.
PMO	Principal Medical Officer
PNTL	Pacific Nuclear Transport Limited: PNTL is owned by INS (62.5%), AREVA (12.5%) and a consortium of Japanese nuclear companies (25%) and its fleet is managed by Serco Limited. PNTL operates a fleet of purpose built ships capable of carrying all categories of nuclear material.
POCO	Post Operational Clean Out: The first stage in preparing plant for care and maintenance after operations have ceased.
Pond	Water storage facility for encased nuclear waste and fuel units awaiting reprocessing.

Pool reactor	Reactor in which fuel elements are submerged in an open water pool. The water serves as a moderator, reflector and coolant. Popularly called a 'swimming pool reactor', it is used for research and training, not for electricity generation.
PPE	Personal Protective Equipment
Practice	A human activity that involves the introduction of a new source of exposure to people or increases an existing exposure. A new practice requires a justification decision.
Pressure vessel	A closed, strong-walled container housing the core of most power reactors and designed to hold gases or liquids at high pressures. It usually also contains the moderator, neutron reflector, thermal shield, and control rods.
PRISM	Power Reactor Innovative Small Module: Also known as S-PRISM or SuperPRISM is a fast breeding reactor developed by GE Hitachi Nuclear Energy. GEH announced during July 2012 that it had submitted a proposal to the NDA outlining the feasibility of the PRISM reactor to dispose of the UK's current stockpile of Plutonium.
Probabilistic Safety Assessment	A mathematical tool for calculating the risk of certain problems or accidents occurring at a nuclear power station
Protective Barrier	A material or set of materials that absorbs radiation and is designed to reduce exposure.
Protective Marking Scheme (UK)	<p>Marking scheme published by the UK Government which is applied to documents and correspondence containing sensitive nuclear information. Allowable protective markings are:</p> <ul style="list-style-type: none"> (a) OFFICIAL (b) SECRET (c) TOP SECRET <p>The terms "UNCLASSIFIED", "NON" and "NOT PROTECTIVELY MARKED" are used to indicate positively that a protective marking is not needed for the document or item of correspondence in question.</p> <p>All of the above terms should be avoided outside the context of the marking scheme.</p>
Proton	An elementary particle with unit atomic mass approximately and unit positive electric charge. One of the two elementary particles found in atomic nuclei.
PSA	Probabilistic Safety Assessment, sometimes also known as PRA (probabilistic risk assessment): Methodology to probabilistically estimate risks. Fault tree analysis and event tree analysis are integral techniques to PSA.
Pu	See Plutonium.
PUNE	Public Understanding of Nuclear Energy: One of the work-streams of the Nuclear Industry Council.
PWR	Pressurised Water Reactor: A reactor whose primary coolant is maintained under such a pressure that no bulk boiling occurs. The reactor uses light water as a moderator and as a coolant. In the UK, Sizewell B is one such reactor operated by EDF Energy Nuclear Generation Limited (formally

	British Energy).
Quality Assurance	The process by which a developer ensures that standards are met during manufacturing.
Quarterly Notification Levels	Quarterly emissions level, specified by the Environment Agency in the nuclear operators Environment Permit, and which, if exceeded, must be reported to the Environment Agency.
R2P2	Reducing Risks Protecting People: A document which describes the decision-making process of the HSE. It aims to make the procedures and protocols which the HSE follows transparent so as to ensure that the HSE's decision-making process, including risk assessment and risk management, is perceived as valid.
Radiation	The process of emitting energy as waves or particles. The energy thus radiated. Frequently used for ionising radiation except when it is necessary to avoid confusion with non-ionising radiation.
Radiation Dose Constraints	A numerical dose figure based on knowledge and assessment that is used as a planning aid for minimising individual radiation dose.
Radiation Protection	The protection of people from the harmful effects of ionising radiation.
Radiation shielding	Reducing the level of radiation between a radioactive source and a person by interposing a shield of absorbing material.
Radioactive Substances Act 1993 / RSA 1993	Formerly the principal piece of legislation regulating radioactive substances (still in force but largely repealed or application amended). In England and Wales, the Environmental Permitting regime has replaced the authorisation regime contained in the RSA 1993, such that an Environmental Permit must now be obtained from the Environment Agency rather than an authorisation under the RSA 1993 (see below). In Scotland and Northern Ireland, the authorisation regime under the RSA 1993 (and subordinate legislation) continues to apply.
Radioactive Substances Regulation (RSR)	The Environmental Permitting Regulations 2010, Schedule 23, replace the relevant sections of the Radioactive Substance Act 1993 (RSA93) for legislative controls on keeping and use of radioactive substances and the accumulation or discharge of radioactive waste.
Radioactive Waste	Radioactive materials at the end of a useful life cycle or in a product that is no longer useful and should be properly disposed of.
Radioactivity	The spontaneous emission of radiation, generally alpha or beta particles, often accompanied by gamma rays, from the nucleus of an unstable isotope. Also, the rate at which radioactive material emits radiation. Measured in units of becquerels or disintegrations per second. Other measurements are used (e.g. Sieverts) which relate to physiological effects.
Radionuclide	An unstable nuclide that emits ionising radiation.
Radium	An element which is a radioactive decay product of uranium often found in uranium ore. It has several radioactive isotopes.
Radon	A heavy radioactive gas given off by rocks containing radium (or thorium). These rocks have existed since the formation of Earth's crust and radon is often the single largest contributor to an individual's background radiation dose, and is the most variable from location to location. Radon is a noble

	gas (a Group VIII element) – other members of the series are Helium, Neon, Argon, Krypton and Xenon.
RADSAFE	Transport emergency arrangements used by the main organisations in the UK nuclear industry.
RCA	Radiation Control Area
RCA	Reactor Controlled Area
RCC-E	Design Rules for Electrical Equipment in the Nuclear Island: French electrical design guide published by Afcen (French Association for Design, Construction and In-Service Inspection Rules for Nuclear Island Components).
RD	Responsible Designer: Generally NPP Designers and Operators do not have all the detailed, specialised knowledge required of all the systems and components important to nuclear and industrial safety. It may therefore assign its responsibilities for some parts of the plant to other entities that do have that knowledge. Such entities are not simple subcontractors; they have a formal responsibility for maintaining their specialised knowledge of design and their competence in the detailed design process.
Reactor Pressure Vessel	The part of the NPP which houses the reactor core and cooling system.
Reactor Protection System	The Reactor Protection Systems are designed to automatically shut-down the reactor and maintain it shut-down when needed. Facilities to instigate a manual backup are provided in whole or part.
Reactor Vendor	A company selling its reactor design to potential operators.
Reference accident	One of a range of accidents at a nuclear reactor or other nuclear installation that can reasonably be foreseen in safety analysis as giving rise to the most significant release of radionuclides from the site.
Regulatory Body	An authority which regulates any aspect of the planning, construction, operation and decommissioning of a nuclear power plant.
Regulatory Hold Points	A system of approvals that must be specifically given by the ONR before an operator can continue with the construction or operation of a nuclear power plant.
REM	(US terminology) Roentgen Equivalent Man: A standard unit of radiation dose. It measures the effects of ionising radiation on humans. The dose equivalent in REM's is equal to the absorbed dose in rads multiplied by the quality factor of the type of radiation.
Remediation	A general term for providing a remedy. Environmental remediation deals with the removal of pollution or contaminants from soil, groundwater, sediment, or surface water etc. for the general protection of human health and the environment.
Renewable Energy Guarantees of Origin ('REGO's)	One of the three types of Green Energy Certificate that generators of electricity from renewable sources may be entitled to claim. REGOs do not have a monetary value in the same way as ROCs and LECs. Rather, their main purpose is as evidence of renewable electricity production. This is particularly useful for renewable generators who are not eligible under the Renewables Obligation. Suppliers are obliged to give their customers details of the mix of fuels used to produce the electricity supplied to them, and are therefore likely to want to purchase electricity from generators with a REGO.
Renewables	The current main mechanism for supporting large scale generation of

Obligation	renewable electricity in the UK. It was introduced in April 2002 and places an obligation on UK suppliers of electricity to source an increasing proportion of their electricity from renewable sources.
Repository	Long term radioactive waste storage facility.
REPIR	Radiation (Emergency Planning and Public Information) Regulations
REPIR	The Radiation (Emergency Preparedness and Public Information) Regulations 2001
Reprocessing	Recycling of spent nuclear fuel into reusable uranium, plutonium and fission products. In the UK this work is currently carried out at the THORP facility at Sellafield in Cumbria, although the THORP plant will be closed in 2018. In France, AREVA operates the La Hague facility on the French Cotentin Peninsula. It has been in operation since 1976, and has a capacity of about 1700 tonnes per year. Japan has a not dissimilar facility at Rokkasho.
Research Reactor	A nuclear reactor that is used solely for research purposes.
RIMNET	Radioactive Incidents Monitoring Network is a network of monitoring stations used by the UK Government to assess the levels of radioactivity across the UK.
Risk	Risk is calculated in a three stage process: (a) What can go wrong? (b) How likely is it to occur? (c) What are the potential consequences?
RMADS	Risk Management Accredited Document Set: The set of documents used by ONR and other Government Agencies (e.g. the Ministry of Defence) to accredit networks to hold sensitive HMG information.
RMTT	Radioactive Materials Transport Team: Unit within Government which has control over issues relating to the transport and movement of nuclear material by road and rail throughout Great Britain. Also adopts an advisory road where radioactive material is transported by sea or air in the UK. RMTT was formerly part of DfT, but it was transferred to ONR in October 2011, principally to ensure that the Secretary of State at DECC is the "competent authority" for matters concerning the transport of radioactive material.
ROCs	Renewables Obligation Certificate: A Green Energy Certificate issued to an accredited generator for eligible renewable electricity generated within the United Kingdom and supplied to customers within the United Kingdom by a licensed electricity supplier. Suppliers meet their obligations under the Renewables Obligation by presenting sufficient Renewables Obligation Certificates. Where suppliers do not have sufficient ROCs to meet their obligations, they must pay an equivalent amount into a fund, the proceeds of which are paid back on a pro-rated basis to those suppliers that have presented ROCs.
Roentgen	A unit of ionising radiation widely used in industry.
Rosatom	Russian based full cycle nuclear services company and international developer of VVER-1200 for international projects.

RP	Reactor Physicist
RPA	Radiation Protection Advisor
RPP	Radiation Protection Programme
RPS	Radiation Protection Supervisor
RSR Permit	A permit to make certain radioactive discharges to the environment issued by the EA under Schedule 23 of the Environmental Permitting (England and Wales) Regulations 2010 as amended. One of the operational permits required to operate a nuclear power station.
RSRL	Research Sites Restoration Limited: The site licence company at the Harwell and Winfrith sites. The staff were all formerly part of UKAEA but a new company was established and became the SLC on 2 February 2009 as a precursor to competing for the role of PBO.
RWM Ltd	Formerly known as Radioactive Waste Management Directorate, on 1st April 2014 Radioactive Waste Management Directorate became a wholly-owned subsidiary of the NDA and is now known as Radioactive Waste Management Limited (RWM Ltd). It continues to be responsible for delivering Government policy for geological disposal of higher activity radioactive waste and for developing waste management solutions.
RWMD	See RWM Ltd.
SAC	A special area of conservation pursuant to the Habitats Directive due to its unique characteristics as a habitat.
SACI	Significant Adverse Condition Investigation
Safeguards	<p>1 A term used in the regulation of domestic nuclear facilities and materials. The use of material control and accounting programs must verify that all special nuclear material is properly controlled and accounted for, and the physical protection equipment and security forces; and</p> <p>2 As used by the International Atomic Energy Agency ('IAEA'), verifying that the 'peaceful use' commitments made in binding non-proliferation agreements, both bilateral and multilateral, are honoured.</p>
Safety Case	A documented body of evidence which is submitted to regulators to provide a convincing and valid argument that a specified system is safe for a given application in a given context or environment.
Safety Rod	A control rod used to decrease the reactor reactivity in the case of emergencies.
SAGs	Radioactive Incidents Monitoring Network is a network of monitoring stations used by the UK Government to assess the levels of radioactivity across the UK.
SBERGs	Symptom Based Emergency Response Guidelines provide advisory guidance to nuclear operators following a beyond design basis accident in an advanced gas cooled reactor.
SCC	Strategic Co-ordination Centre
SCO	Safety Case Officer

SCRAM	Emergency shutdown of a nuclear reactor involving insertion of control rods.
SDP	<ol style="list-style-type: none"> 1 Silos Direct Encapsulation Plant: The project to process nuclear waste recovered from the Magnox Swarf Storage Silo on the Sellafield site and package it ready for long term storage. 2 Sellafield Direct Encapsulation Plant (in the context of Sellafield Limited). 3 Submarine Dismantling Project (in the context of the Ministry of Defence). 4 Sodium Disposal Plant (in the context of Dounreay).
Sealed Source	A device in which a radioactive material has been contained within an outer casing. This outer casing makes an accidental release of the contents extremely unlikely. Sealed sources have an extensive range of medical, educational and industrial uses, notably in general diagnosis and cancer treatments, and in the oil and gas industries.
Semta SSC	The Sector Skills Council for Science, Engineering and Manufacturing: The Sector Skills Council for the Advanced Manufacturing and Engineering sectors.
SEPA	Scottish Environment Protection Agency: Scotland's environmental regulator. The main role is to protect and improve the environment. SEPA is a non-departmental public body, accountable through Scottish Ministers to the Scottish Parliament. SEPA has been advising Scottish Ministers, regulated businesses, industry and the public on environmental best practice for over a decade.
SERT	Standby Emergency Response Team
SFAIRP	So far as is reasonably practicable.
SFL	Springfields Fuels Limited (see Springfields)
Shex or Shareholder Executive	Created in September 2003 to improve the Government's performance as a shareholder in businesses. Shex currently has a portfolio of 26 businesses in which the Government has a shareholding. Their role is to work with government departments and management teams to help these businesses perform better. Shex want to create a climate of ownership that, while challenging, is genuinely supportive and provides the framework for them to succeed. Shex advise Ministers and officials on a wide range of shareholder issues including objectives, governance, strategy, performance monitoring, board appointments and remuneration. Companies within Shex include 'UKAEA', the National Nuclear Laboratory and Urenco (amongst other non-nuclear assets).
Shielding	Broadly, the use of certain protective materials to prevent or reduce the amount of ionising radiation to which people and/or equipment are exposed.
Sievert (Sv)	<p>The Sievert is the international system (SI) derived unit for a dose equivalent to 1 Joule/kilogram. 1 Sievert = 100 rem. It is named after Rolf Sievert, a Swedish physicist famous for work on the biological effects of radiation. The effective dose in Sieverts is calculated as the absorbed dose measured in Gy multiplied by a weighting factor specific to each type of radiation and organ.</p> <p>See Becquerel and Gray for comparison.</p>

SIL	Safety Integrity Level as defined in IEC 61508:2010 Functional Safety of Electrical/Electronic/Programmable Electronic Safety-Related Systems.
SIOI	Station Item Operating Instruction
Site Licence	A licence granted in respect of a particular nuclear site pursuant to the Nuclear Installations Act 1965.
Site Licence Conditions	<p>The Nuclear Installations Act 1965 (as amended) requires HSE (through ONR) to attach conditions to nuclear site licences. Licence conditions define areas of nuclear safety to which a licensee should pay attention to ensure safe operation of the site. While some conditions impose specific duties others require the licensee to devise and implement adequate arrangements in particular areas. The issues covered range from arrangements for ensuring the safety of plant and for controlling operations to management issues such as the supervision and training of staff. Breach of a licence condition is an offence under NIA65 s.4(6).</p> <p>A schedule of 35 standard conditions was incorporated into all nuclear site licences granted between 1990 and 1999. A new licence condition, Licence Condition 36 (LC36), was attached to all nuclear site licences at the end of July 1999. LC36(5) came into effect on 1 August 1999 and LC36(1)-(4) came into effect on 1 April 2000; this delay allowed time for licensees to develop their arrangements to achieve compliance.</p> <p>A high-level summary of the 36 conditions attached to a nuclear site licence is below:</p> <p>LC1 - Definitions and interpretations.</p> <p>LC2 – Adequate provision to ensure that no unauthorised access to site is allowed.</p> <p>LC3 – Restricts the ability of the site licensee to deal in or dispose of any part of the licensed site (i.e. by way of sale, assignment or leasing). The expression “LC(3) consent” relates to the consent of the ONR which is required before the licensee can deal in or dispose of any part of the licensed site.</p> <p>LC4 – Restricts what nuclear materials can be brought on site and their usage.</p> <p>LC5 – Restricts the destination where the site licensee can ship nuclear materials.</p> <p>LC6 – Ensures that the site licensee has adequate provision for the management of records and documents.</p> <p>LC7 – Ensures that the site licensee has adequate provision for the notification, recording, investigation and reporting of incidents.</p> <p>LC8 – Ensures that the site has adequate warning notices and that their meaning is clear and explained.</p> <p>LC9 - Ensures that every person authorised to be on the site receives adequate instructions (to the extent that this is necessary having regard to the circumstances of that person being on the site) as regards the risks and hazards associated with the plant and its operation, the precautions to be observed in connection therewith and the action to be taken in the event of an accident or emergency on the site.</p> <p>LC10 – Requires the site licensee to make and implement adequate arrangements for suitable training for all those on site who have</p>

	<p>responsibility for any operations which may affect safety.</p> <p>LC11 – Requires the site licensee to make and implement adequate arrangement for dealing with any accident or emergency arising on the site and their effects.</p> <p>LC12 – Ensures that the site licensee has adequate arrangements to ensure that only suitably qualified and experienced persons perform any duties which may affect the safety of operations.</p> <p>LC13 – Ensures that the site licensee establishes a nuclear safety committee(s).</p> <p>LC14 – Ensures that the licensee creates and maintains relevant safety cases.</p> <p>LC15 – Ensures that safety cases are regularly reviewed.</p> <p>LC16 – Ensures that there are accurate site plans.</p> <p>LC17 – Ensures that the site licensee has adequate management and quality systems in place.</p> <p>LC18 – Ensures that there are adequate measures in place to assess average worker dosage.</p> <p>LC19 - Where the site licensee proposes to construct or install any new plant which may affect safety, the licensee shall make and implement adequate arrangements to control the construction or installation.</p> <p>LC20 – Ensures that no modification is made during the period of construction to the design of the plant which may affect safety, except in accordance with adequate arrangements made and implemented by the site licensee for that purpose.</p> <p>LC21 – Ensures that the site licensee makes and implements adequate arrangements for the commissioning of any plant or process which may affect safety.</p> <p>LC22 – Ensures that the site licensee makes and implements adequate arrangements to control any modification or experiment carried out on any part of the existing plant or processes which may affect safety.</p> <p>LC23 – Ensures that the site licensee produces adequate safety cases to demonstrate the safety of operation and to identify the conditions and limits necessary in the interests of safety.</p> <p>LC24 - Ensure that all operations which may affect safety are carried out in accordance with written instructions.</p> <p>LC25 - Ensures that adequate records are made of the operation, inspection and maintenance of any plant.</p> <p>LC26 - Ensures that no operations are carried out which may affect safety except under the control and supervision of suitably qualified and experienced persons.</p> <p>LC27 - Ensures that a plant is not operated, inspected, maintained or tested unless suitable and sufficient safety mechanisms, devices and circuits are properly connected and in good working order.</p> <p>LC28 – Ensures that adequate arrangements for the regular and systematic examination, inspection, maintenance and testing of all plant</p>
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	<p>are in place.</p> <p>LC29 – Gives the regulators the power to specify additional tests, inspections and examinations in connection with any plant.</p> <p>LC30 – Covers the need for periodic shutdown to facilitate maintenance.</p> <p>LC31 – Gives the regulators the power to enforce a shutdown if they believe it necessary.</p> <p>LC32 – Minimises the radioactive waste produced by the site.</p> <p>LC33 – Ensures that waste is disposed of via approved mechanisms.</p> <p>LC34 – Ensures adequate provision against radioactive leakage to the environment.</p> <p>LC35 – Ensures that there is an adequate decommissioning plan.</p> <p>LC36 – Ensures that the site licensee maintains adequate resources to run the site safely.</p> <p>www.hse.gov.uk/nuclear/silicon.pdf</p>
SL	See Sellafield Limited.
SLC	<p>Site Licence Company: The entity that holds the nuclear site licence and the discharge authorisations for a UK nuclear site.</p> <p>Specifically in the case of sites designated the responsibility of the NDA under the Energy Act 2004, the SLC carries out the daily management and operations of the site under a contract (principally an M&O contract) with the NDA.</p> <p>The SLCs across the NDA's nuclear estate are as follows:</p> <ul style="list-style-type: none"> (a) Sellafield Limited (comprising Sellafield, including Calder Hall & Windscale); (b) Magnox Limited (comprising Berkeley, Bradwell, Chapelcross, Dungeness A, Hinkley Point A, Hunterston A, Sizewell A, Trawsfynydd, Wylfa & Oldbury); (c) Dounreay Site Restoration Limited (Dounreay only); (d) Research Sites Restoration Limited (comprising Harwell & Winfrith); and (e) LLW Repository Limited (LLWR near Drigg only). <p>Note: Springfields Fuels Ltd is owned by Westinghouse and NDA have leased the site on a long-term basis to Westinghouse. This means that NDA retains responsibility for the historic nuclear liabilities whilst Westinghouse undertake their fuel manufacturing business.</p> <p>Capenhurst is no longer a part of Sellafield. In November 2012 Capenhurst Nuclear Services Limited (CNS), a URENCO Group company, took ownership of the land, combining it with an adjacent site it already owns to create one nuclear licensed site.</p>
SLCA	Site Licence Company Agreement: The contract between NDA and its SLC following competitions (formerly M&O contracts).

SME	<p>1 Small- / Medium-sized Enterprise; or</p> <p>2 Subject Matter Expert.</p> <p>The Cabinet Office uses the EU definition for SME; a small enterprise is a company with fewer than 50 employees and a turnover of balance sheet total under £10m while a medium enterprise is a company with fewer than 250 employees and a turnover or balance sheet total under £43m.</p> <p>See http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_en.pdf for the European Commission's user guide and model declaration.</p>
SME Action Plan	Each Government department has an SME Action Plan which details how it will support the Government's aspiration for allocating 25% of spend to SMEs. The NDA has its own SME Action Plan as a subset of DECC's SME Action Plan.
SMP	<p>Sellafield MOX Plant: A plant located at Sellafield used to generate mixed-oxide fuel.</p> <p>In August 2011, the NDA announced that SMP would be closed.</p>
SMR	Small Modular Reactor: A reactor type with an output of less than 300 MWe.
SNI	Sensitive Nuclear Information
SoDA	Statement of Design Acceptability: See GDA.
SoS	Secretary of State
SPA	A special protection area pursuant to the Habitats Directive due to its resident or transient animal species.
Spent (depleted) nuclear fuel	<p>Irradiated nuclear reactor fuel that has reached the end of its useful life to the extent that it can no longer effectively maintain a chain reaction and generate sufficient heat.</p> <p>Spent nuclear fuel is fuel removed from a reactor after final use. The main commercial UK fuels are Magnox, AGR and PWR. Typically, spent fuel is made up of approximately 96% un-reacted Uranium, 1% Plutonium, and 3% waste products. The precise composition depends largely on the type of reactor and the amount of power produced by the fuel.</p>
SPF / Security Policy Framework	<p>The Security Policy Framework (SPF) describes the standards, best practice guidelines and approaches that are required to protect UK government assets (people, information and infrastructure).</p> <p>It focuses on the outcomes that are required to achieve a proportionate and risk managed approach to security that enables government business to function effectively, safely and securely.</p>
SPIRE	SPIRE is an electronic licensing system provided by the Export Control Organisation (See ECO). It allows users to apply for export or trade licences for activities and items that require a licence for the wide range of 'controlled' goods (such as radioactive sources, security items and military goods, etc.).
Split Package Contract	The overall responsibility for the design and construction of the project is divided among a relatively small number of contractors, each contractor being in charge of a large package of work.

Springfields	Springfields, near Preston, has provided nuclear fuel fabrication services since the mid-1940's. It was the first plant in the world to produce fuel for a commercial power station. The site has witnessed many changes over the years and today it is run, owned and operated by Springfields Fuels Limited, under the management of Westinghouse Electric UK Limited.
SQEP	Suitably Qualified and Experienced Person(nel)
SRD	Safety and Reliability Directorate
SSA	<p>1 Strategic Siting Assessment: Part of the regulatory framework which applies to new nuclear which is designed to determine the suitability of potential sites for new nuclear electricity generation (which is also required under the Habitats Directive); or,</p> <p>2 Shared Services Alliance: A group of NDA and SLC commercial directors supporting strategic supply chain initiatives and collaborative procurement across the NDA.</p>
SSC	Structure, System, or Component
Stakeholder	The NDA consider a stakeholder to be any person or organisation that has a declared interest in the NDA's work.
Steam Generator	Vessel used to transfer heat from one medium to another. Used in pressurised water and gas-cooled reactors to convert water into steam using the heat produced by the reactor core. In PWRs, the heat is supplied as the high-pressure water circulating around the reactor. In Magnox and AGRs, the heat is supplied by the high pressure CO ₂ used to remove the heat from the reactor core.
Stone Report	The report commissioned by John Hutton when Secretary of State for BERR from his Senior Advisor, Tim Stone, into the (then) Nuclear Installations Inspectorate. The report examined the NII as an organisation (but did not look at its performance as a safety regulator) and made recommendations on its structure, accountability, governance and financing. The report's recommendations were fully accepted by the Government and led to the creation of the Office of Nuclear Regulation as a public corporation.
Stress Tests	<p>Following the nuclear accident in Fukushima, the EU reacted swiftly and requested that all 143 EU-based nuclear plants undergo specific safety tests based on a common set of criteria.</p> <p>The safety of the plants was to be assessed against the possibility of both natural and man-made hazards (airplane crashes, earthquakes, fires etc.).</p> <p>These tests were carried out in 2011 and 2012. On 4 October 2012 the European Commission released a final Communication on the results of the stress tests. This Communication highlighted that the Commission considers that European nuclear power plants have generally high safety standards but further improvements are needed in almost all of them.</p> <p>Action plans have been prepared by national regulators following the tests. These will go through peer reviews in early 2013, in order to verify that the stress test recommendations are consistently implemented throughout the EU in a transparent way. The Commission will report on the implementation of the recommendations in June 2014, in partnership with national regulators.</p>
Subcritical mass	Fissile material of a quantity insufficient in volume or geometrically arranged in such a way that no chain reaction can be maintained.

Supervised Area	An area that has radiation and contamination present at levels below Controlled Areas. Access to such an area is limited by the licensee or responsible organisation.
Supply Chain (Nuclear)	The system of organisations, people, technology, activities, information and resources involved in moving nuclear energy from generator/supplier to customer.
Sv	The Sievert is a measurement unit of radiation dose to living tissue. Single doses are usually measured in millisievert (mSv) or microsievert (μ Sv). See Sievert.
SWR-1000	Also known as KERENA™, this is AREVA's 1250 Mwe generation III+ boiling water reactor design. This, along with the ATEMA1™ design is still in the design phase. Design features include enhanced safety, simplified operation, lower fuel requirements and the production of smaller volumes of waste. They typically feature inherent, or 'passive', safety features which depend only on physical phenomena such as convection, gravity or resistance to high temperatures, not on functioning of engineered components. For the utility and vendor, standardised design provides the scope for faster licensing, reduced capital costs and shorter construction times.
SZB	Sizewell B (Power Station)
Tailings	Residual material left over from the processing of ore.
TENORM	Technically-Enhanced Naturally-Occurring Radioactive Materials: Naturally-occurring radioactive materials which have been concentrated or exposed by human activities.
TEPCO	The Tokyo Electric Power Company, responsible for the maintenance of the nuclear reactors at the Fukushima-Daiichi nuclear power plant in Japan. TEPCO's handling of the crisis at Fukushima has been criticised, and the company is receiving financial support from the Japanese Government to handle compensation claims.
Th	See Thorium.
The Brussels Supplementary Convention	The Convention Supplementary to the Paris Convention 1960
The Convention on Supplementary Compensation or the CSC	The Convention on Supplementary Compensation for Nuclear Damage (not yet in force)
The Joint Protocol	The Joint Protocol Relating to the Application of the Vienna Convention and the Paris Convention 1992 which provides a link between the Vienna Convention and the Paris Convention.
The Vienna Convention	Vienna Convention on Civil Liability for Nuclear Damage 1997 as amended
Thermal shield	This is located either within a reactor pressure vessel or between the vessel and the biological shield. The thermal shield is comprised of several layers of high-density material. Its function is to reduce radiation heating in the vessel and the biological shield.
Thorium	An element similar to uranium which is being considered as the basis of an alternative fuel cycle. Thorium is globally more abundant than uranium, but there are a range of technical and commercial factors which need to be

	addressed to bring it to full scale operation, and it is not yet clear if it will be developed to the same scale as today's uranium fuel cycle. Thorium was/is the principle element that makes gas mantles radiate light when heated by a high-temperature gas flame. A gas mantle, in operation, is a mesh of Thorium Oxide.
Thorium	Thorium-232
THORP	Thermal Oxide Reprocessing Plant, located at Sellafield. This plant reprocesses spent nuclear fuel from nuclear reactors and separates the Uranium and Plutonium, which can be reused in mixed oxide fuel, from the radioactive wastes, which are treated and stored at the plant. Construction of THORP started in the 1970s, and was completed in 1994. The plant went into operation in August 1997.
Threat Assessment	The process of analysing the security risks to nuclear facilities and material on a national and international basis.
Tier contractors	Tier 1 contractors: A term used to refer to the PBO/SLC on an NDA site (or the senior 'work stream' contractors in new build). Tier 2: These contractors are the main interface with the Tier 1 companies. They hold a direct contract with the Tier 1 companies, which can include, for example, the supply of services on the licensed site. Tier 3 & 4: These are often SMEs who generally contract with Tier 2 contractors in support of the Tier 2's contract with Tier 1.
TiiMS	The Incident Information Management System
TLD	Thermo Luminescent Dosimeter
Tolerable Risk	The level of risk defined as "tolerable" in the Health and Safety Executive guidance document 'The Tolerability of Risk from Nuclear Power Stations', 1988 as amended in 1992.
Trans-uranics	Elements higher than Uranium in the Periodic Table. Many waste products from nuclear fission are trans-uranics. All these elements are unstable and radioactive. The highest element currently known is Ununoctium (Uuo) and has an atomic number of 118.
TOR	Torness (Power Station)
Transboundary EIA	An assessment of the impact of a development on the environment of other EU member states under Regulation 24 of the EIA Regs.
Triple Bar (TB) Existing Nuclear	The Triple Bar is a set of three short courses which have been designed with industry involvement to prepare individuals requiring unescorted access to nuclear sites. The training is focussed at a fundamental level to introduce the requirements for compliance, nuclear awareness and industry behaviours.
Triple Bar (TB) Manufacturing	The third of the TB suite designed specifically to support employees in the nuclear manufacturing supply chain.
Triple Bar (TB) New Build Sites	The TB New Build Sites contextualises the courses for individuals who will specifically be working on the New Build agenda and is ideal for construction workers to gain the knowledge they need to work safely.
Triple Bar (TB)	The final one of the TB suite designed in collaboration with the IAEA for

Nuclear Security	everyone working in and in support of the nuclear industry and to be made available globally via the NTN.
Tritium	An isotope of hydrogen with mass number 3, i.e. it contains two neutrons as well as one proton. It is radioactive with beta decay to Helium-3. Part of the fuel to be used in the ITER fusion reactor (in which it will be fused with Deuterium). This fusion reaction has been extensively studied at the JET facility in Culham, Oxfordshire. Tritium is also a waste product from the irradiation of water under certain specific conditions. Also used in certain luminous tubes.
TSC	1 Technical Support Company(ies) 2 Transport Safety Case
Turnkey Contract (procurement structure)	A single contractor or consortium of contractors assumes overall responsibility for completing all parts and all phases of the project design and construction and assumes the majority of the key project risks.
TUSNE	Trade Unionists for Safe Nuclear Energy is an informal grouping of trade unionists who are supportive of the use of civil nuclear energy within a balanced energy policy and a safe and clean environment. The organisation's executive committee is made up of senior officials from the major trade unions within the electricity supply industry. TUSNE's main mission is to provide a forum for debate about energy issues, and regularly attends trade union and political conferences throughout the UK.
TW	Terawatt, being one trillion Watts.
UHF	Ultra High Frequency (Radio)
UK Inventory	The 2010 UK Radioactive Waste Inventory compiled and published jointly by the NDA and DECC.
UKAEA	United Kingdom Atomic Energy Authority: UKAEA is a Non-Departmental Government Body which has a historical role in Nuclear Research. It conducted pioneering research into Nuclear Energy between the 1940s and 1960s. UKAEA manages the nuclear research programme and Fusion Research in the UK (Joint European Torus – 'JET' at Culham). JET is the only facility in the world to have created sustained nuclear fusion – the current record is around 20 seconds. Many of UKAEA's historic assets and liabilities have been transferred to the NDA, among other entities, pursuant to nuclear transfer schemes under the Energy Act 2004.
UKAEA Combined Pension Scheme	An unfunded, Government-backed pension scheme restricted to members of the public sector which is maintained by UKAEA under paragraph 7(2)(b) of Schedule 1 of the Atomic Energy Authority Act 1954.
UKTI	United Kingdom Trade & Investment works with UK-based businesses to ensure their success in international markets, and encourage the best overseas companies to look to the UK as their global partner of choice. UKTI offers services to British based firms wanting to gain access to global markets through export, and foreign based firms wanting to use Britain as a base to expand globally.
Uranics	The UK has significant quantities of materials containing Uranium (commonly known as uranics). This uranic material can be generally considered as one of five main types: (a) 'Tails' – depleted Uranium (Uranium hexafluoride, known as 'hex

	<p>tails’);</p> <p>(b) ‘Magnox reactor’ depleted Uranium (Uranium trioxide, and known as MDU);</p> <p>(c) ‘THORP’ Uranium product (Uranium trioxide);</p> <p>(d) Natural Uranium (stored in many forms, such as Uranium metal); and</p> <p>(e) Highly enriched Uranium (in many forms, known as HEU).</p>
Uranium	The heaviest known naturally-occurring element, consisting of two isotopes: uranium-235, which undergoes fission, and uranium-238 which does not. Heavier elements are known collectively as Trans-uranics and are all naturally unstable and decay radioactively.
URENCO	One of four major uranium enrichment suppliers, this company supplies fuel for nuclear power utilities worldwide. URENCO UK is based in Capenhurst, near Chester in the north west of England. At the Capenhurst site, URENCO operates three plants producing enriched uranium (the biggest of which, E23, houses more than 80% of the site’s enrichment capacity), and employs 300 people.
Vital Areas	An area within a Nuclear Licensed Site which contains nuclear material the compromise of which could lead to serious consequences. Usually guarded by the Civil Nuclear Constabulary.
Vitrification	Process used to solidify concentrated solutions of fission products separated during spent fuel reprocessing by mixing them with a glass matrix at high temperature. The fission products are generally metal oxides at the point of embedding in the glass.
VLLW	Very Low Level Waste: A sub-category of LLW with low radioactive properties such that it can be disposed of to an unspecified destination with other municipal, commercial or industrial wastes.
Volunteerism	In terms of current nuclear issues, a voluntary expression, by a local community, of an interest to host an underground nuclear waste facility in return for a package of on-going incentives provided by the NDA/Government. Throughout the cooperative process the needs and concerns of the potential host community are addressed, with the aim of creating a mutually beneficial working partnership between host community and the NDA/Government.
VVER	Vodo-Vodyanoi Energetichesky Reactor / Water Water Energetic Reactor: A pressurised water reactor designed and utilised throughout the Soviet Union states, and currently utilised in Russian NPPs. The VVER is to be put into the UKs GDA process in 2015 on completion of which it will be available for deployment in the UK.
WANO	<p>World Association of Nuclear Operators: An organisation created to improve safety at every nuclear power plant in the world. After the accident at the Chernobyl nuclear power plant in 1986, nuclear operators world-wide realised that the consequences had an effect on every nuclear power plant and international cooperation was needed to ensure that such an accident can never happen again.</p> <p>WANO was formed in May 1989 by nuclear operators world-wide uniting to exchange operating experience in a culture of openness, so members can work together to achieve the highest possible standards of nuclear safety. The culture of openness allows each operator to benefit and learn from others’ experiences, challenges and best practice, with the ultimate goal of improving nuclear plant safety, reliability and performance levels for the benefit of their customers throughout the world.</p>

Waste	By-products of nuclear power generation and other applications of nuclear fission or nuclear technology, such as research and medicine. Radioactive waste is hazardous to most forms of life and the environment, and is regulated by government agencies in order to protect human health and the environment.
Waste Acceptance Criteria	Conditions which must be met before radioactive waste is accepted at a Repository.
Waste Acceptance Criteria (WAC)	Describes the nature, form, physical, chemical, radiological characteristics that can be accepted for onward management and disposal by a waste management operator or waste management site.
Waste container	A vessel used for the purposes of containing a wasteform for disposal.
Waste Framework Directive	European Parliament and Council Directive 2008/98/EC of 19 November 2008 on waste and repealing certain Directives.
Waste Management	The process of managing, treating and storing radioactive waste pending its final disposal
Waste package	The total waste product including the waste, wasteform and the waste container.
Wasteform	Waste which is in the final chemical and physical form in which it will be disposed of (but excluding the waste container and any capping material).
Water Discharge Activity Permit	A permit to discharge water into a watercourse or the sea issued by the EA under Schedule 21 of the Environmental Permitting (England and Wales) Regulations 2010 as amended. One of the operational permits required if cooling water is discharged into the sea during the operation of a nuclear power station.
Watt	A unit of energy. A watt is the power of one amp of current flowing with a potential difference of one volt. A power of one watt acting for one second is one Joule of energy and would raise the temperature of one gram of water by approximately 0.24°C.
WEC	Westinghouse Electric Company (See Westinghouse). Can also refer to World Energy Council.
Weightman (Final) Report	Following the Fukushima incident and publication of his Interim Report, the UK's Chief Inspector of Nuclear Installations, Dr Mike Weightman, published a final report in September 2011 on the implications for the UK nuclear industry of the events in Japan. The report concludes that there are no fundamental weaknesses in the UK nuclear licensing regime or safety assessment principles, and that the UK practice of periodic safety reviews of licensed sites provides a robust means of ensuring continuous improvement in line with advances in technology and standards. However, it highlights the need to continue decommissioning former nuclear sites with vigour.
Weightman (Interim) Report	Following the Fukushima incident, the UK's Chief Inspector of Nuclear Installations, Dr Mike Weightman, published a report in May 2011 which concludes there is no need to curtail the operations of nuclear plants in the UK, but that lessons should be learnt from the events in Japan. The report identifies 25 recommended areas for review - by either industry, the Government or regulators - to determine if sensible and appropriate measures can further improve safety in the UK nuclear industry. These include reviews of the layout of UK power plants, emergency response arrangements, dealing with prolonged loss of power supplies and the risks associated with flooding.

	This report was followed by a Final Report published in September 2011 (see Weightman (Final) Report).
West Lakes Renaissance	The urban regeneration company for Furness and West Cumbria. West Lakes Renaissance attempted to turn around the economy of this area which has and still is suffering from industrial decline, resulting in out-migration (particularly of young people), unemployment and a worn-out infrastructure. Now replaced by Britain's Energy Coast.
Westinghouse	<p>The designer/manufacturer of the AP1000 nuclear reactor, one of the three designs included within the GDA. It provides fuel, services, technology, plant design and equipment to utility and industrial customers in the worldwide commercial nuclear electric power industry. It has a 150 year contract with the NDA for the management of the Springfields site. Westinghouse was sold by BNFL to Toshiba in 2006.</p> <p>In January 2014 Toshiba Westinghouse agreed to buy 60 percent of the NuGen UK nuclear joint venture between GDF Suez and Iberdrola for 102 million pounds, boosting Britain's plans to replace its ageing nuclear fleet. Toshiba's Westinghouse unit will provide three of its AP1000 nuclear reactors, with a combined capacity of 3,400 megawatts (MW), for construction on the NuGen Moorside nuclear site.</p>
Wet Storage	Storage of spent fuel in a pond filled with water.
WG	Welsh Government: WG is facilitating and supporting development of Wylfa Newydd (see WG's <i>'Towards a Low Carbon Future'</i> , March 2012) and is responsible for developing skills and education agenda in Wales and supporting Welsh supply chain to take advantage of opportunities in nuclear industry - new build, operations and maintenance, and decommissioning.
WIN	Women in Nuclear: Women in Nuclear Global (WiN Global) is a world-wide non-profit making association of women working professionally in various fields of nuclear energy and radiation applications.
WINS	World Institute of Nuclear Security
WNTI	World Nuclear Transport Institute
Wylfa Newydd	The new build nuclear power station to be constructed by Horizon Nuclear Power near the site of the current Wylfa A nuclear plant in Anglesey, North Wales. Previously known as 'Wylfa B'.
X-ray	A discrete quantity of electromagnetic energy without mass or charge. Emitted by an x-ray machine. See gamma ray.
Yellowcake	Yellowcake is the product of the Uranium extraction (milling) process; early production methods resulted in a bright yellow compound, hence the name yellowcake. Yellowcake is commonly referred to as U3O8. This fine powder is packaged in drums and sent to a conversion plant that produces Uranium hexafluoride (UF6) as the next step in the manufacture of nuclear fuel.
YGN	The Young Generation Network (YGN) is a group created by the Nuclear Institute (NI) to offer the younger members of the NI the opportunity to further their knowledge and facilitate networking between generations. It assists career progression and provides a resource for the future of the industry.

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