Environmental Statement Glossary

Table 1: Glossary of terms

Term	Definition
Actinides	Actinides are any of the series of elements with increasing atomic numbers that begins with actinium or thorium and ends with lawrencium. At Trawsfynydd actinides are heavy isotopes used in or deriving from nuclear reactor fuel. Note that this does not mean that any actinides remaining at Trawsfynydd are capable of the sort of reactions that were occurring within reactors during operation.
Activation	Activation is the process by which a material alters state to become radioactive, usually through exposure to neutrons in an operating nuclear reactor. Activation contrasts with radioactive contamination, the latter referring to a material becoming radioactive through contact with, and the transfer of radioactive isotopes from, another radioactive substance.
Active Effluent Treatment Plant (AETP) And Pond Water Treatment Plant (PWTP)	These terms refer to the plant used to remove radioactivity from liquids, as necessary, to allow effluent to be discharged from the site (AETP) or, historically, to allow pond cooling water to be re-used (PWTP).
Advection / advective flow	A process by which a substance is transported through bulk motion of a fluid or gas. In the case of modelling contaminant transport at Trawsfynydd, it is referring to transport by groundwater flow.
Alkalinity	Alkalinity refers to the ability of a solution to “neutralise” acids.
As Low As Reasonably Achievable (ALARA)	This phrase is used in relation to the minimisation of radiation exposure. Radiation exposure is considered to be ALARA when there are no further measures that can be taken to reduce that exposure without incurring disproportionate cost and effort. As well as there being an absolute limit on the public radiation exposure that is permissible, Natural Resources Wales regulate to the ALARA standard through requiring site operators to apply Best Available Techniques (BAT) to minimise radiation exposure.
As Low As Reasonably Practicable (ALARP)	This phrase is used in relation to the minimisation of risks to people, whether due to radiation exposure or other forms of risk. The risks are considered to be ALARP when there are no further measures that can be taken to reduce those risks without incurring

Term	Definition
	disproportionate cost, effort or other detriment. As well as there being absolute limits on permissible risks, the Office for Nuclear Regulation regulate to this ALARP standard.
Background Radioactivity	This term refers to radioactivity of natural origin, together with that of human origin such as from weapons testing, from historic authorised discharges and from any local or remote nuclear accidents.
Baseline	Refers to environmental conditions according to latest available survey and data immediately prior to the implementation of the Proposed Development. The future baseline considers any known or reasonably foreseeable future changes that will take place prior to the completion of the proposed works.
Becquerel (Bq)	The becquerel is the unit of radioactivity in the International System of Units. One becquerel is defined as the radioactivity of a quantity of radioactive material in which one nucleus decays per second. Typically, radioactivity is expressed in terms of millions of Bq (MBq), or thousands of millions of Bq (GBq). Note that different isotopes release different types and amounts of energy when they decay, such that by itself the unit Bq does not provide the complete picture as to the hazard presented by the radioactivity. Different isotopes may emit alpha, beta, gamma or other forms of radiation when they decay.
Best Available Technique(s) (BAT)	The term Best Available Techniques (in England and Wales) refers to the option that is identified as the outcome of the optimisation processes relating to preventing or minimising radioactive emissions and radiological impacts on the environment (see ALARA above).
Biosphere	In the radiological natural evolution assessment, the biosphere is the area into which radionuclides transported through the geosphere may be released. The living organisms present within the biosphere, humans and non-human biota, may accumulate radionuclides and/or receive radiological doses.
Biota / Non-Human Biota	In this Environmental Statement, the term biota refers to any and all living organisms. The term non-human biota is used when specifically referring to living organisms other than people.
Bounding Inventory	An upper estimate of the radioactive inventory of all features within the Disposal Area considered to be credible candidates for remaining on site, either through in situ disposal or disposal for a purpose.
Compartment	In the radiological natural evolution assessment, a compartment represents a volume, containing one or

Term	Definition
	more materials, where properties are uniform over a material type. Radionuclide transport between materials within a compartment is determined based on partition coefficients, whilst transfers into and out of a compartment are controlled by transport processes (e.g., advection, diffusion).
Concentration Factors	Factors that relate the concentration of radionuclides in plants (pasture, vegetables, fruit) or animals (fish, cattle, sheep, poultry) to the concentrations in the associated contaminated biosphere materials (e.g., soil, water).
Cumulative effects	Additional changes caused by a Proposed Development in conjunction with other similar developments or as a combined effect of a set of developments
Diffusion	A process resulting from the random motion of molecules which results in the transport of a substance from areas of high concentration to areas of low concentration.
Disposal [of radioactive waste]	The permanent removal, deposit, destruction, discharge or burial of radioactive waste, without intent to retrieve it at a later time. This includes disposal for a purpose and in situ disposal.
Disposal Area	The area encompassing the proposed on-site disposals.
Disposal for a purpose	On-site disposal of solid radioactive waste by permanent deposit where, if suitable radioactive waste were not available, other materials would have to be found to fulfil the purpose.
Disposal in situ	On-site disposal of solid radioactive waste, such as a buried structure, by leaving it permanently in position, together with any necessary preparatory works.
Dose Coefficients	Values used to convert radionuclide activity (Bq) exposure to effective dose (Sv) or dose rates (Sv/year).
End State	The condition of site or part of a site once all decommissioning and clean-up activities have ceased.
Environmental Impact Assessment	The process of evaluating the likely significant environmental effects of a proposed project or development over and above the existing circumstances (or ‘baseline’)
Environmental Quality Standard (EQS)	EQS is an environmental quality standard for specific substances, which sets concentration thresholds below which no adverse impact on the fresh water environment should occur.
Environmental Statement	The written output presenting the full findings of the Environmental Impact Assessment.

Term	Definition
Final Site Clearance	This term refers to the programme of decommissioning and waste management activities necessary to achieve the site end state.
Fission Products	Fission products are any of the lighter atoms formed by splitting heavier atoms by the process of nuclear fission. In the case of Trawsfynydd nuclear fission took place during electricity generation and operation of the nuclear reactors. Important fission products in relation to Trawsfynydd include Caesium-137 and Sr-90.
Fuel Element Debris (FED)	Components removed from used fuel elements before those fuel elements were transferred for reprocessing at the Sellafield plant in Cumbria.
Geological Disposal Facility (GDF)	The current long-term strategy for Higher Activity Waste in England and Wales is for these wastes to be disposed of safely and securely hundreds of metres deep underground in a deep geological disposal facility, known as the GDF.
Geosphere	In the radiological natural evolution assessment, the geosphere is the pathway through which releases from the disposals are transported, in flowing groundwater, from the Disposal Area to the surrounding biosphere.
Grays (Gy)	The energy absorbed per unit mass in human tissue or non-human biota from exposure to radiation. In practice, the energy absorbed is often referred to in micro-Gy, meaning thousandths of a Gray.
Hard standing	A hard standing area is typically made of concrete asphalt or compacted gravel, designed to withstand heavy loads.
High Level Waste (HLW)	Radioactive wastes that generate heat as a result of their radioactivity, so this factor has to be taken into account in the design of storage or disposal facilities. There is no High Level Waste at Trawsfynydd.
Higher Activity Waste (HAW)	Radioactive waste that exceeds the radioactivity level in the definition of Low-Level Waste (LLW) and LLW that is unsuitable for disposal via currently available routes.
ILW Store or Interim Storage Facility (ISF)	A building, usually purpose built, for the long-term storage of packaged ILW awaiting an off-site disposal route to become available.
In Scope	The term “in scope” means that a substance has a radioactivity concentration level that is subject to controls under Schedule 23 of the environmental permitting regulations. See also “out-of-scope”.
In Situ Disposal and Disposal in Situ	**On-site disposal of solid radioactive waste, such as a buried structure, by leaving it permanently in**

Term	Definition
	position, together with any necessary preparatory works.
Intermediate Level Waste (ILW)	Radioactive waste that is above the numerical limits of Low-Level Waste (LLW) but which does not have heat-generating properties that must be taken into account in its storage or disposal. At present there is no off-site disposal route for ILW, and it is therefore packaged for long-term storage, usually at the site of origin awaiting an off-site disposal route to become available.
Isotope	Isotopes are distinct "versions" of the same chemical element. In general terms, they have the same atomic number (number of protons in their nucleus, which dictates chemical behaviour) but different numbers of neutrons (which makes some isotopes of the same element radioactive and others not). The term "radionuclide" is sometimes used to refer to particular radioactive isotopes.
Low Active Low-Level Waste (LALLW)	This term refers to LLW that is of sufficiently low specific activity to be disposed of in a permitted landfill. The upper bound on the specific activity of LALLW is specific to the receiving landfill.
Low-Level Waste (LLW)	LLW is defined in government policy as 'radioactive waste having a radioactive content not exceeding four gigabecquerels (4 GBq) per tonne (GBq/te) of alpha or 12 GBq/te of beta/gamma activity. Note that strictly speaking, LLW includes 'VLLW' and other categories of LLW such as 'LALLW'.
Miscellaneous Activated Components (MAC)	Redundant components removed from reactors which, due to their history of use in the reactors, have become "activated" (see above). MAC is typically ILW.
Nuclear Decommissioning Authority (NDA)	The Nuclear Decommissioning Authority (NDA) is a non-departmental public body of the Department for Energy Security and Net Zero originally formed by the Energy Act 2004. Its purpose is to deliver the decommissioning and clean-up of the UK's civil nuclear legacy in a safe and cost-effective manner, and where possible to accelerate programmes of work that reduce hazard.
On-Site Disposal	'On-site disposal' of radioactive waste can include: • In situ disposal (e.g. leaving a buried structure, such as a pipeline, in place); • disposal for a purpose (e.g. depositing demolition wastes in a sub-surface void); and • disposal in a dedicated radioactive waste facility.
Optimisation	The principle of ensuring that all exposures to ionising radiation of any members of the public and of the population as a whole are kept as low as reasonably

Term	Definition
	achievable (ALARA), economic and social factors being taken into account. Optimisation is one of the basic principles of radiation protection recommended by the International Commission on Radiological Protection (ICRP) and incorporated into UK law.
Out-of-Scope	The term “out-of-scope” means that a substance has a sufficiently low radioactivity concentration level that it is not subject to controls under Schedule 23 of the environmental permitting regulations. See also “in scope”. Broadly, “out-of-scope” may be thought of as legally “not radioactive”, though in reality almost all substances naturally contain radioactivity to some extent.
Partition (or Sorption) Coefficient	The equilibrium ratio of the concentration of the contaminant in a material (e.g., soil or concrete) to the concentration of the contaminant in a reference fluid (usually water).
Period of Control	This term refers to a period of time before a site can be released from radioactive substances regulation (RSR).
pH	pH is a number relating to the quantity of hydrogen ions present in a solution. pH varies from 1 to 14 in which 7 is “neutral”, lower values are more acid and higher values more alkaline.
Pond Lanes	Term used to collectively refer to the former spent fuel ponds consisting of the main lanes (SW, SE, NW and NE lanes), the centre bays and the north and south “corridors”.
Post Works Phase	Environmental monitoring and various maintenance activities.
Preparatory Phase	All internal works that do not require planning permission. De-planting the buildings and structures, activities include asbestos removal for example.
Proposed Development	The development subject to application for consent, as presented in **Chapter 3: The Project and its Alternatives**.
Radioactive Waste	Waste that is “in scope” (see above) of environmental permitting regulations.
Radionuclide	An unstable (radioactive) form of a chemical element that releases radiation as it breaks down.
Release from Radioactive Substances Regulation (RSR)	The revocation or surrendering of a permit granted under Environmental Permitting Regulations (2016).
Representative Person	“Representative persons” is a concept used in assessments of the radiation exposure of members of the public. Such persons are assumed to have habits, in terms of time spent in certain locations, types and

Term	Definition
	quantities of food consumed etc., that mean they would receive a radiation dose typical of the most exposed groups of individuals.
Sievert (Sv)	This is the standard unit of radiation exposure (dose) to people, relating to the energy absorbed per unit mass, the type of radiation involved, and the sensitivity of different parts of the body to the effects of radiation. From the dose the risks associated with the dose can be evaluated. Doses are often expressed in terms of thousandths of a Sv (mSv) or millionths of a Sv (microSv).
Significance	A measure of the importance of the environmental effect, defined by criteria specific to the environmental aspect.
Significant effects	It is a requirement of the EIA Regulations to determine the likely significant effects of the development on the environment which should relate to the level of an effect and the type of effect. Where possible significant effects should be mitigated.
Site-Wide Environmental Safety Case (SWESC)	A documented set of claims, made by the operator of a nuclear site, to demonstrate achievement by the site as a whole of the required standard of safety, including environmental safety.
Sorption	Sorption is a physical and chemical process by which one substance becomes attached to another.
Study Area	The defined area within which effects are assessed. The Study Area typically covers the Application Site boundary and extends to cover a relevant Zone of Influence identified by the environmental aspect.
Validation Monitoring	Monitoring to confirm that the condition and behaviour of the site and where relevant the surrounding area, is in accordance with the assumptions of the SWESC. Validation monitoring is carried out by the environmental permit holder and may continue for a period after the completion of all planned work on site involving radioactive substances, ending before release from RSR.
Very Low-Level Radioactive Waste (VLLW)	VLLW is a sub-category of LLW, it comprises waste that can be safely disposed of with municipal, commercial or industrial waste, or can be disposed of at specified landfill.
Waste Management Plan (WMP)	A documented plan, prepared by the operator of a nuclear site, which provides a comprehensive description of the current intent for dealing with all radioactive substances on or adjacent to the site and demonstrates how waste management has been optimised.

Term	Definition
Works Phase	Expected duration about 24 months. The main demolition activities, void infilling, construction of concrete cap and drainage installation.
Zone of Influence	The area surrounding the Application Site boundary which could result in potentially significant effects.

Table 2: Abbreviations

Term	Definition
AEP	Annual Exceedance Probability
AETP	Active Effluent Treatment Plant
ALARA	As Low as Reasonably Achievable
ALARP	As Low as Reasonably Practicable
AOD	Above Ordnance Datum
ASPT	Average Score Per Taxon
BAT	Best Available Technique(s)
Bgl	Below ground level
BMWP	Biological Monitoring Working Party
Bq	Becquerel
CTRN	Calculation of Road Traffic Noise
DfaP	Disposal for a purpose
DfR	Deposit for Recovery
EA	Environment Agency
EIA	Environmental Impact Assessment
EIADR	Environmental Impact Assessment for Decommissioning Regulations
ENPA	Eyri National Park Authority
EPR	Environmental Permitting Regulations
EQS	Environmental Quality Standard
ES	Environmental Statement
FED	Fuel Element Debris
FMfP	Flood Map for Planning
GCN	Great Crested Newt
GDF	Geological Disposal Facility
GIM	Generic Intrusion Methodology
GRR	Guidance on the requirements for release from radioactive substances regulation
Gy	Gray (absorbed radiation dose)
HAW	Higher Activity Wastes
HMS	Habitat Modification Scores
HPI	Habitats of Principal Importance
HQA	Habitat Quality Assessment
IAEA	International Atomic Energy Agency
ICRP	International Commission on Radiological Protection
ILW	Intermediate Level Waste
ISF	Interim Storage Facility / ILW Store

JNCC	Joint Nature Conservation Committee
LA-LLW	Low Active Low-Level Waste
LLDPE	Linear low-density polyethylene
LLFA	Lead Local Flood Authority
LLW	Low-Level Waste
LPA	Local Planning Authority
MAC	Miscellaneous Activated Components
MSV	Main (Miscellaneous) Sludge Vault
NDA	Nuclear Decommissioning Authority
NLS	Nuclear Licensed Site
NNR	National Nature Reserve
NRW	Natural Resource Wales
NTAXA	Number of scoring taxa
NVC	National Vegetation Classification
ONR	Office for Nuclear Regulation
OS	Ordnance Survey
PWTP	Pond Water Treatment Plant
RHS	River Habitat Survey
RSR	Radioactive Substance Regulation
RV	Resin Vault
SAB	SuDS Drainage Approval Body
SAC	Special Areas of Conservation
SNPA	Snowdonia National Park Authority (now Eryri National Park Authority)
SPA	Special Protection Area
SPI	Species of Principal Importance
SSSI	Site of Special Scientific Interest
SuDS	Sustainable drainage systems
Sv	Sievert (effective dose equivalent)
SWESC	Site-Wide Environmental Safety Case
UKCP	UK Climate Projections
VLLW	Very Low-Level Waste
WHPT	Walley Hawkes Paisley Trigg
WMP	Waste Management Plan