Department for Energy Security & Net Zero

Consultation:

Part II

Draft UK policy framework for managing radioactive substances and nuclear decommissioning

Department for Energy Security & Net Zero

Scottish Government
Riaghaltas na h-Alba

Department of Agriculture, Environment and Rural Affairs
www.daera-ni.gov.uk

Llywodraeth Cymru
Welsh Government

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Preface

Here we provide a full draft of the proposed UK-wide policy framework for managing radioactive substances and nuclear decommissioning. Some of the policies contained in this draft framework are not finalised as they are the subject of consultation (see Part I for consultation proposals and consultation questions on proposed policy changes).

This draft policy framework also sets out policies which we consider are still fit for purpose and which we have no plans to change and therefore are not included in Part I of this document.

However, for some policy areas this is the first time we have published comprehensive policy statements and we are seeking views on whether the policy statements capture accurately and clearly existing policy, practice, and regulation.

The final policy framework will be published once the outcome of this consultation is known.

Draft Policy Framework:

Managing Radioactive Substances and Nuclear Decommissioning in the UK

Contents

Introduction

Purpose

1.1 This document has been developed by the UK Government and devolved administrations. Its purpose is to provide a coherent UK-wide policy framework for managing radioactive substances and nuclear decommissioning. It covers the management of radioactive substances under normal operating conditions, including orphan sources (radioactive sources which have been abandoned, lost, misplaced, stolen, or otherwise transferred without proper authorisation). Policy on managing radioactive incidents and emergencies is out of scope.

1.2 It replaces Command Paper 2919[1] and subsequent amendments and additions; specific policies that are being replaced are referenced in individual chapters.

1.3 It sets out to industry, arm's length bodies, and regulators, the UK Government's and devolved administrations' expectations in relation to the management of radioactive substances and nuclear decommissioning. Our aim is to provide a clear direction of travel and to drive earlier, more cost-effective nuclear decommissioning and effective management of radioactive substances, including radioactive waste.

1.4 Some of the policy areas in this framework are reserved meaning the UK Government sets policy for the whole of the UK. Other policy areas are devolved, with the legislatures and devolved administrations in Scotland, Wales and Northern Ireland being responsible for policy in their respective nations. Where there is a policy difference, we refer to or summarise it in the main body of this document and set out in appendices any policies that are specific to a particular nation, and which therefore do not apply across the whole of the UK.

Key considerations

1.5 Our policies on the management of radioactive substances and nuclear decommissioning are based on the following key considerations:

- protection of human health and the environment;
- safety and security;

[1] UK Government (1995). Command Paper 2919, Review of Radioactive Waste Management Policy: Final Conclusions. Available at: https://www.gov.uk/government/publications/radioactive-waste-management-policy-review-1994

- sustainability, including the United Nations Sustainable Development Goals;[2]
- a proportionate risk-based lifecycle approach to the management of radioactive substances;
- a proportionate, risk-informed lifecycle approach to nuclear decommissioning and clean-up that demonstrates cost effectiveness and value for money while not compromising safety and minimising the impact on the environment;
- minimisation of greenhouse gas emissions; and
- transparency and openness in public engagement.

Sustainability

1.6 Our policies take into account internationally recognised best practice in sustainability. The UK Government and devolved administrations adopted the 2030 Agenda for Sustainable Development at the United Nations Sustainable Development Summit in 2015. This agenda provides a shared blueprint for the world we want to see by 2030. It is centred around the 17 Sustainable Development Goals (also known as the Global Goals or SDGs).

1.7 Our policies on the management of radioactive substances and nuclear decommissioning support many of these goals. In this policy framework we place particular emphasis on the sustainability goals concerned with protecting the environment, protecting communities and protecting health and well-being. We want sustainability to be hard wired into thinking on the management of radioactive substances and how nuclear decommissioning is carried out.

1.8 The use of radioactive materials in our health service promotes better health outcomes for our people helping to work towards sustainability goals to ensure healthy lives and well-being. Nuclear technology continues to provide low carbon electricity in some parts of the UK.

1.9 The beneficial use of radioactive materials inevitably creates radioactive waste. Sustainable and resilient infrastructure for radioactive waste management is crucial to enable us to decommission our nuclear facilities, manage our nuclear legacy and to continue to benefit from radioactive materials. Innovation in construction of new waste management infrastructure, such as disposal facilities, is vital to minimise greenhouse gas emissions. Innovation in waste management processes with an emphasis on

[2] Sustainable Development Goals. Available at: https://unfoundation.org/what-we-do/issues/sustainable-development-goals/?gclid=EAIaIQobChMI7a2K4Iia8gIVS-N3Ch2_lA6GEAAYAiAAEgLjFPD_BwE

minimising the creation of waste in the first place has a key role in ensuring we can continue to benefit from the use of radioactive materials sustainably.

1.10 A sustainable approach to managing radioactive substances and nuclear decommissioning is also about supporting people, skills and jobs. Maintaining and developing a skilled and diverse workforce in the nuclear industry and other sectors where radioactive substances are used, supports economic growth in local communities giving them a sustainable future.

2

What are radioactive substances?

2.1 There are two kinds of radiation: **ionising radiation** and **non-ionising radiation**. Ionising radiation is any type of particle or electromagnetic wave that carries enough energy to directly or indirectly remove electrons from an atom (i.e. 'ionise' the atom). This includes high-energy electromagnetic radiation (gamma radiation), charged particles (alpha and beta radiation), and neutrons. Such radiation can cause damage to body tissue. Non-ionising radiation can have enough energy to move atoms in a molecule around or cause them to vibrate, but not enough to cause ionisation. Examples of non-ionising radiation are radio waves, visible light and microwaves. Our policies apply to radioactive substances that produce ionising radiation. The term radioactive substances covers both radioactive material and radioactive waste.

2.2 Radioactive substances produce three main kinds of ionising radiation: **alpha radiation**, **beta radiation** and **gamma rays**.

2.3 **Alpha radiation** – Alpha radiation consists of heavy, positively charged particles emitted by atoms of elements such as uranium and radium. Alpha radiation can be stopped completely by a sheet of paper or by the thin surface layer of our skin (epidermis). However, if alpha-emitting materials are taken into the body by breathing, eating, or drinking, they can reach internal tissues directly and can cause biological damage.

2.4 **Beta radiation** – Beta radiation consists of electrons. In general, a sheet of aluminium a few millimetres thick will stop beta radiation. However, if beta-emitting materials are taken into the body by breathing, eating, or drinking, they can reach internal tissues directly and can cause biological damage, though to a lesser degree than an equivalent amount of alpha radiation.

2.5 **Gamma rays** – are electromagnetic radiation similar to X-rays, light, and radio waves but of higher energy. Gamma rays can pass right through the human body, causing biological damage, but can be stopped by thick walls of concrete or lead.

2.6 **Neutrons** – are uncharged particles and do not produce ionisation directly. But, their interaction with the atoms of matter can give rise to alpha, beta, gamma, or X-rays which can then produce ionisation. Neutrons are penetrating but can be stopped by thick masses of concrete, water or paraffin.

2.7 The time it takes for half of the atoms in a radioactive substance to decay is known as the half-life. The half-life of a radioactive substance can vary from fractions of a second to billions of years.

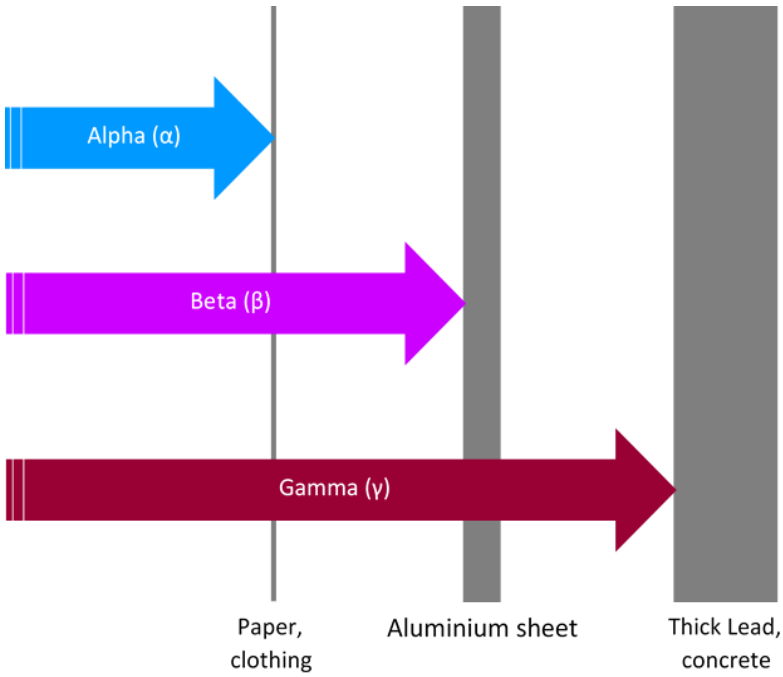


Figure 1. This figure shows the three main kinds of ionising radiation and materials they can penetrate (Source: DESNZ).

2.8 We use radioactive substances in many different products and processes. Some uses of radioactive substances and processes pose little risk to human health or the environment and therefore do not need any special handling or controls. Other uses can pose a risk to human health and the environment. Products or processes that use more hazardous radioactive substances must be more carefully controlled and the radioactive waste they produce managed and disposed of carefully. For instance, radioactive waste that is created during the operation and decommissioning of nuclear facilities requires controls, and in most cases special disposal facilities.

2.9 The management of radioactive materials and radioactive waste is controlled in accordance with international standards that are incorporated into the UK's legislative framework. These require exposures and/or potential exposures to ionising radiation from human activity to be kept below a certain threshold and as low as reasonably achievable (ALARA).

2.10 Different regulatory regimes in the field of radiological protection in the UK use different terminology and have their own guidance, including reducing risks to as low as reasonably practicable (ALARP) and reducing exposure to ionising radiation to as low as reasonably achievable (ALARA). The terminology is broadly synonymous.

2.11 Dose is the term used to quantify the amount of biological harm from exposure to ionising radiation. There are different kinds of dose; the one that is generally used for regulatory purposes is the effective dose; the unit of the effective dose is the sievert (Sv). Since one sievert is a large dose, radiation doses are expressed in millisievert (mSv) or microsievert (µSv) which are one-thousandth or one millionth of a sievert respectively.

3

International guidelines, regulations, and obligations

3.1 The policies of the UK Government and devolved administrations on radioactive substances are framed within the context of international guidelines and regulations. A number of different organisations are involved, each with a distinct role.

International organisations

3.2 **The International Commission on Radiological Protection (ICRP)** is an independent body set up to advance the science of radiological protection for the public benefit. It provides recommendations and guidance on all aspects of protection against ionising radiation. The ICRP is generally regarded as the authoritative international body in this field.

3.3 **The International Atomic Energy Agency (IAEA)** is an autonomous inter-governmental organisation founded by the United Nations (UN). Its objective is to assist its member countries in maintaining and further developing, through international co-operation, the scientific, technological and legal bases required for a safe, environmentally sound and economical use of nuclear energy for peaceful purposes. It sets international standards for safety and security in relation to radioactive substances. The UK is a member of the IAEA.

3.4 **The Nuclear Energy Agency (NEA)** of the Organisation for Economic Cooperation and Development (OECD) is an intergovernmental agency that facilitates co-operation among countries with advanced nuclear technology infrastructures to seek excellence in nuclear safety, technology, science, environment and law. It is responsible for developing international conventions and agreements in relation to various aspects of nuclear safety. The UK is a member of the NEA.

International conventions

3.5 International conventions governing safety, security and environmental protection, to which the UK is a signatory, have been developed by a number of bodies including the UN, the IAEA and the NEA. These include:

- **The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management** establishes fundamental safety principles. It applies to spent fuel resulting from the operation of civilian nuclear reactors and to radioactive waste resulting from civilian applications.
- **The Convention on Nuclear Safety** applies to nuclear installations - land based nuclear power stations and facilities that are associated with, and directly related to, governmental organisations founded by the UN. The Convention commits contracting parties to maintaining high levels of safety by establishing fundamental safety principles.
- **The Paris Convention** concerns liability and compensation for damage caused by accidents occurring while producing nuclear energy.
- **The Brussels Convention** provides for a system to make additional resources available from public funds to compensate victims for damage caused by a nuclear incident where the amount needed to compensate exceeds the operator's liability limit under the Paris Convention.
- **The Aarhus Convention** grants the public rights regarding access to information, public participation, and access to justice in governmental decision-making processes on matters concerning the local, national and transboundary environment.
- **The Convention on Environmental Impact Assessment in a Transboundary Context (Espoo Convention)** lays down the general obligation of countries to notify and consult each other on all major projects under consideration that are likely to have a significant adverse environmental impact across boundaries. The Convention covers a number of sectors and activities including nuclear power stations and disposal and processing of radioactive waste.
- **The Convention for the Protection of the Marine Environment of the North East Atlantic (OSPAR Convention)** is an agreement by 15 governments and the EU to protect the marine environment of the North-East Atlantic from various pollutants including radioactive substances and to organise programmes and measures designed to ensure effective national action.

4

The UK regulatory framework: roles and responsibilities

4.1 In the UK there is a range of organisations involved in advising on and developing policy, implementing policy and enforcing regulatory requirements. Here we give a high-level overview of the roles and responsibilities of the following:

- UK Government and devolved administrations;
- government delivery bodies;
- independent regulators;
- advisory bodies.

UK Government and devolved administrations

4.2 Radioactive substances, including policy on the management of radioactive waste and environmental protection, are devolved matters. The Welsh Government, Northern Ireland Executive and Scottish Government each have responsibility for these matters in their respective nations.

4.3 Policy concerning nuclear installations (including nuclear safety, security and safeguards), health and safety at work as well as import and export control of radioactive substances is reserved.

Delivery bodies

4.4 **The Nuclear Decommissioning Authority (NDA)** is a non-departmental public body that was established by the Energy Act 2004. It is responsible for delivering decommissioning and clean-up of the publicly owned nuclear sites across the whole of the UK and the safe and secure management of radioactive waste arising from those sites. It is accountable to both the UK Government and Scottish ministers. The NDA also has oversight of the decommissioning plans for EDF Energy's existing fleet of nuclear power stations, which will transfer to the NDA for decommissioning once they stop generating power and have been defueled. It also provides expert advice to the UK Government on nuclear new build operators' decommissioning and waste management plans.

4.5 The NDA's estate comprises the UK's 17 earliest nuclear sites (the nuclear legacy) across England, Scotland and Wales as well as organisations that deliver radioactive waste management solutions. The estate includes:

- **Sellafield** which has played a pivotal role in the UK's nuclear industry since the 1940s. Also on the site are Calder Hall (the first nuclear power station to supply domestic electricity in the UK) and Windscale (produced plutonium for military purposes into the 1950s).
- **Dounreay**, which was the UK's centre of research into fast reactors from 1955 until 1994. It is now Scotland's largest nuclear decommissioning and clean-up project.
- **Magnox** sites which comprise 10 nuclear power stations that have ceased operating and were declared fuel free in Autumn 2019. It also comprises Harwell which was the UK's first nuclear research facility, and Winfrith which was a major centre for ground-breaking reactor development.
- **Nuclear Waste Services brings together the Low Level Waste Repository Ltd, Radioactive Waste Management Ltd and the NDA group's Integrated Waste Management Programme.** It oversees waste management activities across the NDA group. **The Low Level Waste Repository Limited (LLWR)** is responsible for managing the low level waste disposal facility in Cumbria. The facility, which has been operating since 1959, has safely disposed of the nation's low-level waste for over 50 years. **Radioactive Waste Management Limited** (RWM) has been given the responsibility for implementing geological disposal of the UK's most hazardous radioactive waste.

The regulators

4.6 **The environmental regulators'** areas of responsibility include environmental pollution, waste management, water resources, and conservation. They regulate the management of radioactive substances. The four regulators in the UK are:

- **The Environment Agency (EA)** is responsible for implementing and enforcing environmental protection legislation in England. It regulates the disposal of radioactive waste on or from nuclear sites and the keeping and use of radioactive material by tenants on nuclear sites. It also regulates the keeping and use of radioactive material and the accumulation and disposal of radioactive waste on or from all other premises.
- **The Scottish Environment Protection Agency (SEPA)** is responsible for implementing and enforcing environmental protection legislation in Scotland. It regulates the management of radioactive waste at nuclear sites and the

management of radioactive material and radioactive waste at non-nuclear sites.

- **Natural Resources Wales (NRW)** is responsible for implementing and enforcing environmental protection legislation in Wales. It regulates the disposal of radioactive waste from nuclear and non-nuclear sites.
- **The Northern Ireland Environment Agency (NIEA)** is responsible for implementing and enforcing environmental protection legislation in Northern Ireland. NIEA regulates the management of radioactive material and radioactive waste at non-nuclear sites. It also regulates the transport of radioactive materials by road in Northern Ireland.

4.7 **The Office for Nuclear Regulation (ONR)** is the licensing authority for nuclear installations in Great Britain and independently regulates nuclear safety and security at 35 nuclear licensed sites. ONR also regulate conventional health and safety on nuclear sites, the transport of radioactive materials, and ensures compliance by the UK with its safeguards obligations.

4.8 The ONR and the environmental regulators work together regulating the management and storage of radioactive waste on nuclear licensed sites to ensure decisions about the management of radioactive waste take into account the disposability of waste alongside the nuclear safety considerations.

4.9 **The Defence Nuclear Safety Regulator (DNSR)** is the Ministry of Defence regulator responsible for regulating across the UK and overseas mobile nuclear equipment, the nuclear hazards of the Naval Nuclear Propulsion Programme and the Nuclear Weapons Programme (including operator and public safety and environmental impact).

4.10 **The Health and Safety Executive (HSE)** is responsible for regulating the health and safety of both workers and the public arising from work activities in Great Britain. It regulates workplaces involving exposure to ionising radiation, including from the use and management of radioactive substances. It regulates conventional health and safety on sites and in workplaces that fall outside of the jurisdiction of ONR (except for premises where local authorities or the Office for Rail and Road are the enforcing authority).

4.11 **The Health and Safety Executive Northern Ireland (HSENI**) is responsible for enforcing health and safety legislation in Northern Ireland. It regulates work that causes or could cause radiation exposure of workers, the public or both.

4.12 **The food safety regulators** are responsible for protecting public health and consumers' wider interests in food, including advice on food safety. They work with the environmental regulators to ensure protection of the food chain in relation to radioactive waste disposal. They are also responsible for authorising food irradiation facilities.

- **The Food Standards Agency (FSA)** is responsible for food safety in England, Wales and Northern Ireland.
- **Food Standards Scotland (FSS)** is responsible for food safety in Scotland.

4.13 **Local planning authorities, including local authorities and national park authorities,** have a statutory duty to carry out specific planning functions, including land use and waste planning, for a particular area. More widely, local authorities are the democratically representative bodies in communities, with responsibilities including education/skills and economic development. They include district councils, county councils, borough councils and unitary authorities.

Advisory bodies

4.14 **The UK Health Security Agency** is an executive agency of the Department of Health and Social Care responsible for health improvement and health protection in England. Its remit also includes providing advice on public health protection from radioactive hazards for the whole of the UK.

4.15 **The Committee on Radioactive Waste Management (CoRWM)** provides independent scrutiny and advice to the UK Government and the devolved administrations on the management of radioactive waste. This includes advice on the delivery of geological disposal.

4.16 **The Committee on Medical Aspects of Radiation in the Environment (COMARE)** is a Department of Health and Social Care expert committee that provides independent advice to all government departments and agencies. Its members are chosen for their medical and scientific expertise. COMARE's role is to assess and advise the UK Government and the devolved administrations on the health effects of radiation (both ionising and non-ionising), and to assess the adequacy of the available data and the need for further research.

4.17 **The Centre for Environment, Fisheries and Aquaculture Science (Cefas)** is an agency of the Department for Environment, Food and Rural Affairs. Part of its role is to help to protect our seas, oceans, and rivers from radioactive pollution by providing data and advice to the UK Government and devolved administrations.

5

The UK's approach to managing radioactive substances

Radiological protection principles

5.1 In the UK, the management of radioactive substances is underpinned by radiological protection principles and a proportionate risk-based approach to regulating their management, known as a 'graded approach'. These principles and the graded approach are derived from ICRP recommendations and IAEA standards, which flow down to and inform domestic legislation and policies. They are enshrined in UK law and underpin the UK Government's and devolved administrations' policies on managing radioactive substances, including radioactive waste. The three fundamental principles are:

- justification;
- optimisation of protection; and
- dose limitation.

5.2 **Justification of practices** – this means any new type or class of practice involving exposure to ionising radiation should do more good than harm. No type or class of practice involving exposures to ionising radiation should be adopted unless it produces sufficient benefit to the exposed individuals or to society to outweigh the health detriment it may cause. Practice means any human activity that can increase the exposure of individuals to ionising radiation through a planned exposure, such as the use of radioactive isotopes for medical purposes. (Justification of practices is discussed in more detail in paragraphs 5.11 to 5.22).

5.3 **Optimisation** of protection and safety taking account of economic, environmental, and societal factors - this means the likelihood of exposure, the number of people exposed, and the magnitude of their individual doses should all be kept as low as reasonably achievable (ALARA). This is required in UK law in addition to compliance with dose limits.

5.4 **Dose limitation** (dose limits and dose constraints) – a dose limit is the total radiation dose to an individual that must not be exceeded. Dose constraints are part of the system of radiological protection and are informed by a risk assessment. They are a tool to help restrict, as far as is reasonably practicable, an individual's exposure to ionising radiation that might arise from a particular activity. These are especially useful at the

planning stage of an activity and in relation to individuals who may be exposed to more than one source of radiation. Dose constraints are set so that it is unlikely that the dose limit of 1 mSv per year for members of the public is ever exceeded (other than for medical exposure). The annual public dose limit is 1 mSv per year and the maximum dose constraint is of 0.5 mSv per year.[3] Appendix 4 provides more detail on radiological protection standards.

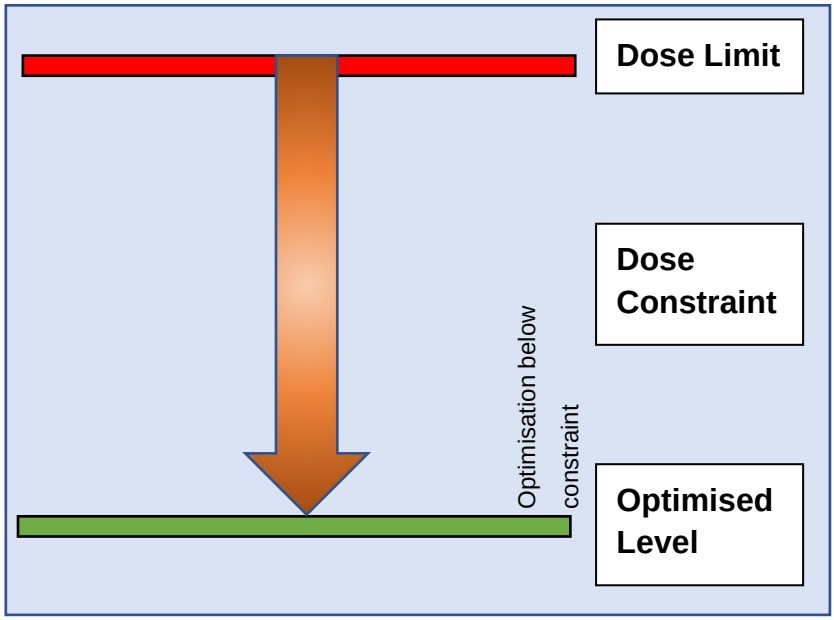


Figure 2. This figure shows how radioactive exposure of members of the public is controlled through limits, constraints and optimisation (Source: DESNZ).

5.5 The principles of justification, optimisation and dose limitation are in line with the IAEA Safety Standards and take account of the ICRP's recommendations. Requirements on ionising radiation protection are implemented in the UK through regulation. Different regulations apply in different parts of the UK, but they all have the same purpose: to protect people and the environment from the harmful effects of radioactive substances. These include:

- the Ionising Radiation Regulations 2017 (IRR17);[4]
- the Justification of Practices Involving Ionising Radiation Regulations 2004;[5]

[3] Derived from the IAEA's International Basic Safety Standards. Available at: https://www.iaea.org/publications/8930/radiation-protection-and-safety-of-radiation-sources-international-basic-safety-standards

[4] The Ionising Radiation Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/1075/contents/made

[5] The Justification of Practices Involving Ionising Radiation Regulations 2004. Available at: https://www.legislation.gov.uk/uksi/2004/1769/contents/made

- the Justification of Practices Involving Ionising Radiation (Amendment) Regulations 2018;[6]
- the Justification Decision Power (Amendment) (EU Exit) Regulations 2019;[7]
- the Ionising Radiation (Medical Exposure) Regulations 2017 (IR(ME)R);[8]
- the Environmental Permitting Regulations 2016 ("EPR16") in England and Wales;[9]
- the Radioactive Substances Act 1993 ("RSA1993") in Northern Ireland;[10]
- the Ionising Radiations Regulations (Northern Ireland) 2017 (IRR(NI)17;[11] and
- the Environmental Authorisations (Scotland) Regulations 2018 ("EASR18")[12] in Scotland.

5.6 The UK Government has published an overview of the UK regulatory framework, *How we regulate radiological and civil nuclear safety in the UK,* for all aspects of radiological and civil nuclear safety across the UK.[13]

Protection of the environment

5.7 In ensuring that people's health is protected from unacceptable levels of radiation, regulators should also seek to protect the integrity of the environment from harm from ionising radiation. There is a range of legislation within the UK and the devolved administrations to protect habitats and biodiversity, and the regulators must ensure that they satisfy the various requirements in their regulatory processes. An options appraisal process is also used to identify the best available techniques (BAT) in England and Wales and best practicable means (BPM) in Scotland and Northern Ireland, to prevent or minimise impacts on the environment.

[6] The Justification of Practices Involving Ionising Radiation(Amendment) Regulations 2018. Available at https://www.legislation.gov.uk/uksi/2018/430/contents/made
[7] The Justification Decision Power (Amendment) (EU Exit) Regulations 2019. Available at https://www.legislation.gov.uk/uksi/2019/215/contents/made
[8] The Ionising Radiation (Medical Exposure) Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/1322/contents/made
[9] The Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made
[10] The Radioactive Substances Act 1993. Available at: https://www.legislation.gov.uk/ukpga/1993/12/contents
[11] The Ionising Radiations Regulations (Northern Ireland) 2017. Available at: https://www.legislation.gov.uk/nisr/2017/229/contents/made
[12] The Environmental Authorisations (Scotland) Regulations 2018. Available at: https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents
[13] UK Government. How we regulate radiological and civil nuclear safety in the UK. Available at: https://www.gov.uk/government/publications/how-we-regulate-radiological-and-civil-nuclear-safety-in-the-uk

Graded approach

5.8 The UK has adopted a graded approach to regulation for all practices involving ionising radiation, and this is embodied in our policy and regulatory framework. Graded approach is the term used in the IAEA's International Basic Safety Standards,[14] to describe proportionate regulation. Practices in this context mean work involving the production, processing, handling, disposal, use, storage, holding or transport of radioactive substances. A graded approach means applying regulatory controls that are commensurate with the characteristics of the given practice or the radioactive source being used in a practice, and with the magnitude and likelihood of the exposures to ionising radiation (i.e. with the risk posed to people's health and the environment).

5.9 Substances containing radioactivity which pose a trivial risk are out of scope of the regulations. Practices which are low risk are exempted from the requirement to be authorised by the relevant environment agency. These exempted activities are instead authorised in legislation, under exemptions (in England, Wales and Northern Ireland) or general binding rules (Scotland).

5.10 For radioactive substances which are in scope, and which are not exempted, legislation (e.g. EPR16 and EASR18) allows for different levels of regulatory permission depending on the risk associated with the practice. The regulations also provide flexibility to the regulators regarding the conditions and limitations which can be included in their permissions.

Justification of practices

5.11 Justification decisions are taken by the Justifying Authority i.e. the devolved administrations for devolved matters, and the appropriate Secretary of State in relation to matters which have not been devolved. There is close co-operation between the four UK nations which is facilitated through a Concordat to achieve a common UK-wide approach to justification decisions.[15]

5.12 Radioactive sources are materials that are used to produce radiation for specific purposes. They are integral to some technologies used in healthcare, pharmaceuticals, and other industries. Radioactive sources can be used, for example, at nuclear licensed sites, at universities for research, or at nuclear medicine sites that dispense radiopharmaceuticals for either diagnostic or therapeutic treatment. It is important that

[14] IAEA 2014. International Basic Safety Standards. Available at: https://www.iaea.org/publications/8930/radiation-protection-and-chasafety-of-radiation-sources-international-basic-safety-standards

[15] UK Government. Concordat on the Implementation of the Justification of Practices Involving Ionising Radiation Regulations 2004. Available at: https://www.gov.uk/government/publications/the-justification-of-practices-involving-ionising-radiation-regulations-2004-guidance-on-their-application-and-administration

people can benefit from their use without being exposed to unacceptable risks. Our policy is that:

- no practice involving exposure to ionising radiation should be adopted unless it produces sufficient benefit to the exposed individuals or to society to outweigh the potential harm it may cause; and
- no-one may carry out a new class or type of practice that is likely to result in exposure to ionising radiation unless a decision has been made by the Justifying Authority confirming that the class or type of practice is justified.

How practices involving exposure to ionising radiation are justified

5.13 Justification is the process that is used to determine whether the individual or societal benefit from a class or type of practice resulting in exposure to ionising radiation outweighs the health detriment it may cause. The framework for determining whether a practice involving exposure to ionising radiation is justified is set out in the Justification of Practices Involving Ionising Radiation 2004[16] as amended by the Justification of Practices Involving Ionising Radiation (Amendment) Regulations 2018)[17] and the Justification Decision Power (Amendment) (EU Exit) Regulations 2019.[18]

5.14 The current regime applies across the UK. The devolved administrations can make their own justification regulations in relation to devolved matters.

5.15 Applications for decisions under the justification process are made to the Justification Application Centre which is managed by Department for Energy Security and Net Zero, (DESNZ formerly BEIS). The Justification Application Centre also holds and maintains a register of existing types and classes of practice that are approved under the justification process.

5.16 There are three types of application that may be made by any person to the Justifying Authority in relation to any class or type of practice. These are:

- for a justification decision in respect of a new class or type of practice;
- for a review of an existing class or type of practice in the light of new and important evidence about its efficacy or consequences;

[16] The Justification of Practices Involving Ionising Radiation Regulations 2004. Available at: https://www.legislation.gov.uk/uksi/2004/1769/contents/made
[17] The Justification of Practices Involving Ionising Radiation (Amendment) Regulations 2018. Available at: https://www.legislation.gov.uk/uksi/2018/430/contents/made
[18] The Justification Decision Power (Amendment)(EU Exit Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/215/contents/made

- for a determination as to whether a practice belongs to a new or an existing class or type of practice.

5.17 A Justifying Authority in exercising functions under the regulations has to be functionally separate from all other persons concerned with the promotion or utilisation of that particular practice. For example, where a Secretary of State is functionally linked with the promoter of the practice then another Secretary of State who is not linked would need to exercise the relevant functions as the Justifying Authority.

5.18 A Justifying Authority may also make a justification decision on a new type or class of practice without receiving an application.

Applications for a new class or type of practice

5.19 When a new justification application is made, the Justifying Authority will decide whether to approve the new class or type of practice by weighing up the benefits and detriments based on the evidence received.

Reviews of existing class or type of practice

5.20 The Justifying Authority decides, in light of the new evidence received, whether a review of an existing type or class of practice is needed either of its own volition or on receipt of an application requesting this. If a decision is made to proceed with a review then the Justifying Authority will further decide whether the type or class of practice should remain justified or not. This decision will be made taking into account the new evidence on the balance of the benefits and detriments.

Determination on whether a practice belongs to a new or an existing class or type of practice

5.21 Decisions on whether a type and class of practice is a new or an existing type and class of practice are based on a comparison between the practice being examined including the associated benefits and detriments and existing classes or types of practice.

5.22 Further information on how the justification process operates and decisions are made can be found in our published guidance.[19]

[19] The Justification of Practices Involving Ionising Radiation Guidance. Available at: https://www.gov.uk/government/publications/the-justification-of-practices-involving-ionising-radiation-regulations-2004-guidance-on-their-application-and-administration

6

Managing radioactive sources

6.1 This chapter sets out our policy for the management of radioactive sources on civil nuclear and non-nuclear sites. Policy on the import and export of radioactive sources is set out in chapter 10. Transport of radioactive sources is not covered in this policy framework.

6.2 The management of radioactive sources is devolved except for matters of national security, which is reserved.

What are radioactive sources?

6.3 Radioactive sources contain radioactive material for the purposes of utilising their radioactivity. In the UK and internationally, they are used for a variety of beneficial purposes including in medicine, industry, research, and education.

6.4 Radioactive sources can vary in terms of their physical characteristics (e.g. how much radiation they emit) and their form - whether they are ‘sealed’ or ‘unsealed’.

6.5 Sealed sources are radioactive sources in which the radioactive substance is permanently sealed in a capsule or incorporated in a solid form with the objective of preventing, under normal conditions of use, any dispersion of radioactive substances. They are designed to withstand rough handling and elevated temperatures without unintentionally releasing their radioactive material. Sealed sources are commonly used in industry, healthcare, and research settings, for example in industrial radiography and to calibrate instruments, and in medicine to irradiate blood before transfusions and to treat cancers.

6.6 Unsealed sources are not permanently sealed within a container. They are generally dispersed during their use which may result in releases to the environment, for example as radioactive liquid discharges (see chapter 7). The use of unsealed sources may also generate solid radioactive waste as secondary waste (e.g. contaminated items and personal protective equipment). Unsealed sources are often in the form of powders, liquids and sometimes gases, and are used extensively in industry and in medicine (e.g. as radioactive tracers to help diagnose and treat diseases). Facilities where unsealed sources are manufactured or used, such as medical and research facilities, may become contaminated during their lifetime and also need to be managed appropriately.

6.7 Radioactive sources can vary in terms of the amount of radiation they emit. ‘High activity sealed sources’ (HASS) are a type of sealed source that is associated with a higher level of risk due to the higher levels of radiation they emit.

Policy on managing radioactive sources

6.8 Our aim is to allow the safe and beneficial use of radioactive sources whilst avoiding undue burdens being placed on future generations. The UK has a well-established radiological safety regime governing the keeping and use of radioactive sources, and the management of radioactive waste, including waste sealed sources.[20]

6.9 It is vital to maintain an effective and comprehensive security regime to ensure that radioactive sources, particularly HASS and other sealed sources, are subject to appropriate regulatory controls. This is to prevent them from being damaged, stolen or used for malicious purposes, thereby protecting society from potentially harmful consequences.

6.10 A proportionate level of safety and security should be applied in all cases where radioactive sources are managed. This is in line with the graded approach and ensures the stringency of control measures and conditions being applied are proportionate to the level of associated risk (chapter 5, paragraphs 5.8 - 5.10, explains the graded approach in more detail).

6.11 The UK is committed to managing radioactive sources in line with international standards and guidance, including the International Basic Safety Standards,[21] Code of Conduct on the Safety and Security of Radioactive Sources,[22] and Guidance on the Management of Disused Radioactive Sources.[23]

6.12 Regulatory oversight should be maintained throughout the whole lifecycle of a source, including once a source is considered to be waste. Through a robust regulatory framework and efficient waste management infrastructure, the UK ensures continuous control of radioactive sources. This is known as a ‘cradle-to-grave’ approach and aims to ensure that radioactive sources do not fall out of regulatory control. This approach also ensures that radioactive sources considered to be waste are managed in line with environmental protection principles including the waste hierarchy. The waste hierarchy

[20] How we regulate radiological and nuclear safety in the UK. Available at: https://www.gov.uk/government/publications/how-we-regulate-radiological-and-civil-nuclear-safety-in-the-uk
[21] Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards. Available at: https://www.iaea.org/publications/8930/radiation-protection-and-safety-of-radiation-sources-international-basic-safety-standards
[22] Code of Conduct for the Safety and Security of Radioactive Sources. Available at: https://www.iaea.org/publications/6956/code-of-conduct-on-the-safety-and-security-of-radioactive-sources
[23] Guidance on the Management of Disused Radioactive Sources. Available at: https://www.iaea.org/zh/publications/13380/guidance-on-the-management-of-disused-radioactive-sources

is a cornerstone of the UK's waste management strategy and is at the heart of the regulation of radioactive waste. The waste hierarchy is discussed in more detail in chapter 8.

6.13 Those keeping and using radioactive sources should aim to use the minimum number and activity of sources required to fulfil their needs. This will reduce the relevant safety and security risks and help to minimise the amount of radioactive waste subsequently produced.

6.14 There is a need for information on radioactive sources to be collected and maintained. Regulators are required to maintain a comprehensive register of HASS (IAEA categories 1-3)[24] held in the UK. Holders of all radioactive sources must maintain records to demonstrate they are managing their radioactive sources appropriately. Regulators can request or review this information, for example, when conducting inspections. Such information helps regulators maintain regulatory oversight. This information also helps to inform future government policy and planning in areas such as safety, security, import and export, and long-term radioactive waste management. By providing accurate information about radioactive sources needing to be disposed of in the future, we can ensure that adequate waste capacity and infrastructures are in place and utilised most efficiently.

How radioactive sources are regulated

6.15 The regulations for the management of radioactive sources are listed in chapter 5, paragraph 5.5. These regulations state how radioactive sources should be managed and set out specific requirements for certain types of sources, including HASS and orphan sources which are discussed further below.

6.16 Radioactive sources on non-nuclear sites, such as hospitals and universities, are regulated by the relevant environment agencies in England, Wales, Scotland, and Northern Ireland. To carry out their activities, source holders require an environmental permit (England and Wales), authorisation (Scotland) or a certificate (Northern Ireland).

6.17 An operator who no longer wishes to carry out their radioactive substances activity can apply to the relevant environment agency to surrender their permit, authorisation, or certificate. The regulator will consider the impact on the environment of continuing with or ceasing the activity. The operator will need to demonstrate that there will be no significant risk to people, or the environment and they must take necessary measures to return the facility to a satisfactory state taking into account the state of the facility before

[24] IAEA Nuclear Security Series No. 11-G (Rev.1). Available at: https://www-pub.iaea.org/MTCD/Publications/PDF/PUB1840_web.pdf

the facility was put into operation. The regulator can grant or refuse an application for surrender.

6.18 On licensed nuclear sites, sources held by nuclear site licensees are regulated by the ONR and must adhere to similar requirements, as set out in IRR17[25] and nuclear site licence conditions.[26]

Security of radioactive sources

6.19 When used for their intended purpose, radioactive sources have far-reaching benefits. If used maliciously or handled inappropriately, radioactive sources have the potential to cause significant harm to society, which can result in long-lasting consequences and significant recovery costs. It is important for radioactive sources to be protected from theft, sabotage, or from being used maliciously for the purposes of crime or terrorism.

6.20 The risks associated with radioactive sources can vary widely and are dependent on several factors. These include the specific type of source, its physical and chemical form, and its activity level.

6.21 Regulatory controls, threat assessments and various protection measures help to improve the security of radioactive sources and deter those seeking to cause harm.

Policy on the security of sealed radioactive sources

6.22 The UK has robust arrangements in place to keep radioactive sources secure. This includes a formal security regime for sealed sources and aggregates of sealed sources in IAEA categories 1-4. The UK has established an effective and comprehensive system for radioactive source security in line with the IAEA's graded approach. This means that some less hazardous radioactive sources in IAEA category 5 are regulated under standard rule permits or exemptions (in England, Wales and Northern Ireland) or general binding rules (in Scotland).

6.23 The UK Government and the devolved administrations expect regulators, where appropriate, to consult with the police, security services or other relevant persons to ensure that appropriate security measures are in place and implemented effectively. For example, the regulators will consult the police on the adequacy of security arrangements proposed by an applicant and consider any advice given by the police when determining an application for a permit for sources in IAEA categories 1 to 4.

[25] The Ionising Radiation Regulations 2017. Available at: https://www.legislation.gov.uk/uksi/2017/1075/contents/made
[26] Nuclear Site Licence Conditions. Available at: https://www.onr.org.uk/documents/licence-condition-handbook.pdf

6.24 The UK Government expects security arrangements in the UK to remain in line with international guidance, including the IAEA's *Categorisation of Radioactive Sources,*[27] *Code of Conduct*[28] *and Nuclear Security Series* (NSS).[29] The IAEA has published detailed, authoritative guidance on keeping radioactive sources secure. This helps governments, regulators, security specialists, facility operations, and law enforcement operations, to ensure that good practice is implemented in the UK. Detailed security requirements are developed and reviewed by the National Counter Terrorism Security Office (NaCTSO); this is based on UK threat information and IAEA recommendations and provides advice on UK security standards.

6.25 In some circumstances, security concerns about particular sealed sources may require a deliberate decision to be made to depart from the priority order in the waste hierarchy. This means in order to remove the risk of these sealed sources being misused in future, disposal may be chosen as the preferred management option rather than re-use or recycle. In such cases, our aim is to reduce the risks associated with these sealed sources by helping to facilitate their safe and secure disposal, and replacement with alternative, safer technologies where viable. This is achieved through close working between government departments and organisations such as the NDA. Reducing the risks associated with all sealed sources also supports the UK's Strategy for Counter Terrorism, CONTEST.[30] This Strategy aims to reduce threats from radiological and nuclear terrorism by strengthening the UK's capabilities to prevent, detect and respond to them.

How the security of radioactive sources is regulated

6.26 The UK has established a robust and comprehensive system to ensure the security of radioactive sources on sites. There are separate regulatory regimes for the transport of radioactive sources. On non-nuclear sites, such as hospitals and universities, the security of radioactive sources is regulated by the four environment agencies for their respective administrations. The relevant regulations are EPR16[31] (England and Wales),

[27] IAEA Categorisation of Radioactive Sources. Safety Guide RS-G-1.9. Available at: https://www-pub.iaea.org/MTCD/publications/PDF/Pub1227_web.pdf
[28] Code of Conduct for the Safety and Security of Radioactive Sources. Available at: https://www.iaea.org/publications/6956/code-of-conduct-on-the-safety-and-security-of-radioactive-sources
[29] IAEA Nuclear Security Series. Available at: https://www.iaea.org/resources/security-series/search
Also see: Implementing Guidance No.11. Available at: https://www.iaea.org/publications/8113/security-of-radioactive-sources
[30] The UK's Strategy for Counter-Terrorism, CONTEST. (published 4th June 2018). Available at: https://www.gov.uk/government/publications/counter-terrorism-strategy-contest-2018
[31] The Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/made

EASR18[32] (Scotland), and RSA93[33] and The High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005[34] (Northern Ireland).

6.27 Security requirements for sealed radioactive sources in the UK are set by NaCTSO and based on standards set by the IAEA. Conditions in environmental permits, authorisations and certificates require source holders to comply with the NaCTSO requirements. The environment agencies work with police Counter Terrorism Security Advisers (CTSAs) who advise on the adequacy of protective security measures for sealed radioactive sources. CTSAs also carry out routine inspections to ensure the security requirements remain adequate.

6.28 The environment agencies in England, Wales and Scotland also regulate mobile HASS (used in equipment for testing or measuring substances based on nuclear sites) and HASS held by tenants on nuclear sites.

6.29 All sealed sources should be managed securely. However, in the case of HASS, the holders must adhere to extra provisions and the regulators must be satisfied with these before granting a permit. Holders of HASS must make and maintain financial provisions for their safe management, submit records of HASS they hold to the relevant environment agency and keep sufficient written information, including photographs, in order to identify the HASS as well as any associated equipment. This information will be particularly useful if a HASS is lost or stolen.

6.30 On licensed nuclear sites, the security of HASS and other sealed sources is regulated by the ONR. Radioactive material on nuclear sites held by site licensees is excluded from environmental regulation. In these cases, records of HASS must be provided to ONR. The operator is required to report whenever sealed sources are brought on to the site, consigned from the site, and transported.

Disused sealed sources

6.31 A disused sealed source is a sealed source which is no longer used or intended to be used for the practice for which authorisation was granted, but which continues to require safe management. Disused sealed sources are at risk of falling out of regulatory control and becoming orphan sources which increases the threat to human health and the environment. It is therefore important to have robust arrangements to maintain effective control over disused sealed sources.

[32] Environmental Authorisations (Scotland) Regulations 2018. Available at: https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents
[33] The Radioactive Act 1993, as amended by the Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland). Available at: https://www.legislation.gov.uk/nisr/2011/290/contents/made
[34] The High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005. Available at: https://www.legislation.gov.uk/uksi/2005/2686/contents/made

6.32 A source may be temporarily out of use or irregularly used. In such circumstances, it is important for source holders to consider whether they expect to use the sealed source again.

Policy on the management of disused sealed sources in England, Wales and Northern Ireland

6.33 Source holders should consider management options for their disused sealed sources. Management options should include effective storage and disposal to eliminate the risks that disused sealed sources may pose to people's health and the environment and ensure proper management throughout the whole lifecycle. Disused sealed sources are considered radioactive waste and should be disposed of promptly. Disused sealed sources may be:

- returned to the supplier;
- transferred to another organisation that is legally entitled to receive them. This may include transfer for reuse or recycling, or short-term storage and management by a source collection agency;
- transferred to a facility for long-term storage pending final disposal.

6.34 In line with our policy on the import and export of radioactive sources (see chapter 10), disused sealed sources that were manufactured in the UK may be imported to the UK for treatment and disposal.

6.35 We encourage the establishment of innovative management options where viable in order to support the activities of source collection agencies (SCAs), which play a crucial role in ensuring that disused sources are managed appropriately.

Policy on the management of disused sealed sources in Scotland.

6.36 The management of disused sealed sources is governed by the relevant permit issued by SEPA. Promptly after a source becomes radioactive waste it must either be;

- returned to the supplier;
- placed in a facility for long-term storage or disposal; or
- transferred to another person

How disused sealed sources are regulated in England, Wales and Northern Ireland

6.37 Adequate arrangements must be in place to ensure the safe management and control of disused sealed sources.

6.38 An exemption applies to the disposal of sealed sources previously used by the permit or certificate holder. The exemption allows disused sources to be transferred to:

- an operator with a permit to accept waste sealed sources of this type;
- a nuclear site licensee; or
- an organisation or another State which is lawfully entitled to receive such waste.

6.39 Operators who receive and manage disused sealed sources should dispose of these in accordance with the disposal routes specified in their permit or certificate.

6.40 Once sources are disused and are being accumulated (stored) prior to disposal, permits and certificates impose conditions on the operator. For example, operators must:

- dispose of them as soon as reasonably practicable and within the maximum time period specified in the permit;
- store the sources safely and securely;
- in some cases notify details of the disposal to the relevant regulator;
- keep records of the disused sources.

6.41 An exemption applies to the accumulation of waste category 5 sources previously used by the operator. The exemption imposes conditions on the operator who must dispose of the sources as soon as practicable and usually within a maximum period of 26 weeks.

6.42 Permits and certificates have additional conditions which require operators holding HASS sources to:

- maintain up to date plans for the management of these sources once they become disused, and implement these plans without delay;
- maintain adequate financial provision for when the source becomes waste.

6.43 Operators must demonstrate that these arrangements are in place before a permit is granted.

6.44 A disused sealed source which is no longer required by the permit holder and may be considered as waste under EPR (16) even if it is to be transferred to someone who will reuse it. The waste hierarchy may apply to disused sealed sources (the waste hierarchy is discussed in more detail in chapter 8). Suitable facilities exist for the long-term storage of disused HASS.

How disused sealed sources are regulated in Scotland

6.45 Anyone managing a sealed source in Scotland requires appropriate authorisation that allows them to transfer or dispose of it when it becomes waste.

6.46 A sealed source in IAEA category 5 can be managed under general binding rules. Notification to SEPA is needed for a category 5 source with an activity greater than 200 kBq. So long as the general binding rules are complied with and notification has been made (if applicable), there is no need for a registration or permit unless the aggregate activity of all individual category 5 sealed sources held exceeds the limit for category 5.

6.47 Sealed sources in IAEA categories 1 to 4 need to be authorised by registration or permit granted by SEPA. A person needs to demonstrate that adequate arrangements are in place for the management of disused sources before a registration or permit is granted. For HASS this includes demonstration that adequate financial provision has been made for when the source becomes waste.

6.48 The permit or registration places conditions on those wanting to transfer sealed sources for disposal. For example, the authorised person must:

- use best practicable means for the management of disused sources;
- transfer them for disposal promptly after they become waste;
- only transfer them to a person who is legally entitled to manage them;
- keep records of disused sources that are transferred for disposal;
- notify details of the transfer for disposal of HASS to SEPA.

Orphan sources

6.49 An ‘orphan source’ is a radioactive source which is not subject to regulatory control. This may be because it has never been under regulatory control, been abandoned, lost, misplaced, stolen, or otherwise transferred without proper authorisation. Orphan sources are rare, however they may arise through:

- the discovery of legacy radioactive materials in use prior to regulatory control, such as World War II cockpit instrument dials containing radium-based luminescent paint;
- abandonment caused by the insolvency of source owners; or
- the deliberate or inadvertent use of inappropriate disposal routes, such as disposing of radioactive sources with other metals at scrapyards.

Policy on the management of orphan sources

6.50 Our aim is for orphan sources to be prevented wherever possible. Our cradle-to-grave approach to the management of radioactive sources aims to minimise the risk of sources falling out of regulatory control and becoming orphaned.

6.51 Where orphan sources do occur these will be controlled, recovered and, where necessary, disposed of.

6.52 If someone finds a source that they think may be orphaned in England, Wales or Northern Ireland, they should notify the relevant environment agency, local authority or the Police. In Scotland, SEPA or the Police should be notified.

6.53 Operators who are likely to find orphan sources as a consequence of their normal business should have arrangements in place to manage these sources in accordance with any requirements the environment agencies may have for permitting or notification.

6.54 The UK Government and the devolved administrations will continue to work with industry and stakeholders to raise awareness of the potential health and safety risks associated with orphan sources, particularly by encouraging detection of potential orphan sources at high risk areas such as scrapyards.[35] Efforts, including Programme Cyclamen - a joint initiative between UK Border Force and the Home Office, that aims to detect and deter the illicit importation of radioactive or nuclear materials as part of CONTEST – can also incidentally detect orphan sources at transport terminals, which are occasionally found in scrap or contaminated items.

How orphan sources are regulated

6.55 The UK Government and the devolved administrations have regulations to help ensure the prevention, detection, recovery, and management of orphan sources. The relevant regulations are EPR16[36] (England and Wales), EASR18[37] (Scotland), and RSA93[38] and The High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005[39] (Northern Ireland) and The Ionising Radiation (Basic Safety Standards) (Miscellaneous Provisions) Regulations 2018 (UK).[40]

[35] Health and Safety Executive. Radioactive Contamination in Scrap in Metal Recycling. Available at: https://www.hse.gov.uk/waste/radioactive-contamination.htm
[36] The Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/made
[37]The Regulatory Reform (Scotland) Act 2014. Available at: https://www.legislation.gov.uk/asp/2014/3/data.xht?view=snippet&wrap=true
[38] The Radioactive Act 1993, as amended by the Radioactive Substances Act 1993 (Amendment) Regulations (Northern Ireland). Available at: https://www.legislation.gov.uk/nisr/2011/290/contents/made
[39]The High-activity Sealed Radioactive Sources and Orphan Sources Regulations 2005. Available at: https://www.legislation.gov.uk/uksi/2005/2686/contents/made
[40] The Ionising Radiation (Basic Safety Standards) (Miscellaneous Provisions) Regulations 2018 Regulations. Available at:https://www.legislation.gov.uk/uksi/2018/482/body

6.56 The environment agencies should have plans in place to ensure that orphan sources are controlled and recovered.

6.57 The environment agencies may issue permits for orphan sources to ensure that these are controlled and recovered or disposed of appropriately.

6.58 In some cases where orphan sources are not appropriately managed the environment agencies have powers to dispose of the sources and will recover costs from the occupier or owner of the premises or other responsible person.

National arrangements for incidents involving radiation

6.59 In addition to requirements and duties on the environment agencies, there are further arrangements in Great Britain to protect the public from radiation hazards where orphan sources are discovered, and in situations where no formal contingency plans exist. In such instances, the National Arrangements for Incidents involving Radiation (NAIR) allow volunteers from hospitals and the nuclear industry to provide quick and accessible assistance to the emergency services. When incidents involve the recovery of orphan sources, responding organisations may volunteer to store these safely and securely on their premises pending disposal. These arrangements are currently under review to ensure that a sustainable model for dealing with future NAIR incidents continues to exist, including developing a long-term funding solution for the disposal of orphan sources arising from NAIR events. In Northern Ireland, arrangements for the management of radioactive material that falls outside of regulatory control are coordinated by NIEA.

Although the UK Government and devolved administrations have in place a robust regulatory framework for managing radioactive sources, we have not previously published the policy that underpins the regulatory framework. This chapter sets out our policy on managing radioactive sources. It reflects existing practice and regulation.

1. Do you think that the draft policy statements on radioactive sources accurately reflects existing practice and regulation? Please provide the reasoning behind your response.

2. Do you have any suggestions on how to improve this chapter on radioactive sources? Please provide the reasoning behind your response.

7

Managing radioactive liquid and gaseous discharges

7.1 Small quantities of radioactive substances may be discharged into the environment, both from nuclear licensed sites and from non-nuclear operators such as universities, hospitals and the oil and gas industry. Radioactive discharges are most typically in the form of gases and liquids.

7.2 Radioactive waste policy, including for liquid and gaseous discharges, is devolved.

Policy on the management of radioactive liquid and gaseous discharges

7.3 The policy of the UK Government and devolved administrations is that the unnecessary introduction of radioactivity into the environment is undesirable, even at levels where doses to humans and other species are low and, on the basis of current knowledge, are unlikely to cause harm. This policy is underpinned by the principles of justification, optimisation, and dose limitation (as outlined in chapter 5) as a means of governing the unnecessary introduction of radioactivity into the environment.

7.4 The UK's policy is that Best Available Techniques (BAT) (in England and Wales – equivalent to Best Practicable Means (BPM) in Scotland and Northern Ireland) should be used to prevent or minimise gaseous and liquid discharges and their impacts on the environment.

7.5 Options for the management of radioactive waste range from direct discharge of gaseous or liquid radioactivity into the environment ("dilute and disperse") to the trapping of radioactivity in a solid, concentrated form for storage and eventual disposal ("concentrate and contain"). The UK Government's and devolved administrations' policy, in line with IAEA guidance, is that "concentrate and contain" should be the preferred option for managing radioactive waste. However, we recognise that this may not always be reasonably practicable, or in some cases even possible, and that some releases to the environment are unavoidable. In all cases, the overriding principles should be that operators disposing of gaseous and liquid discharges must ensure they are below the relevant dose constraints. They must also ensure that exposures to radiation of people

and the environment are kept as low as reasonably achievable – this is the optimisation requirement.

7.6 The UK Government's and devolved administrations' policy is to ensure a sustainable approach is taken towards the management of liquid radioactive discharges, as it is for solid radioactive waste. This is done through application of the waste hierarchy. The waste hierarchy is a cornerstone of the UK's waste management strategy and is at the heart of the regulation of radioactive waste, including discharges. The waste hierarchy is discussed in more detail in chapter 8.

OSPAR and the UK's strategy for radioactive discharges

7.7 The UK is a signatory to the Convention for the Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention). The aim of the OSPAR Convention is to prevent and reduce pollution, including radioactive substances, and to protect the maritime area against the adverse effects of human activities.

7.8 To implement the provisions of the OSPAR Convention and meet the objectives of the *OSPAR Radioactive Substances Strategy* (RSS),[41] the UK produced its first *Strategy for Radioactive Discharges* in 2002.[42] The Strategy originally covered liquid radioactive discharges from nuclear licensed sites, defence facilities and "other sources of discharges", including some non-nuclear sectors, such as the healthcare sector.

7.9 The revised *2009 UK Strategy for Radioactive Discharges* (UKSRD09)[43] built on the original 2002 Strategy and expanded the scope to include gaseous as well as liquid discharges, decommissioning as well as operational activities, and the non-nuclear sector more widely as well as the nuclear sector.

7.10 The UK reviewed UKSRD09 in 2018.[44] This review showed the UK is making good progress towards achieving the outcomes in the 2009 strategy, and that the UK is contributing towards meeting the objectives of the RSS.

7.11 The objectives of the UK's Strategy for Radioactive Discharges are:

[41] The OSPAR Commission's Radioactive Substances Strategy 2010-2020. Available at: https://www.ospar.org/site/assets/files/1470/radsub_strategy.pdf
[42] UK Strategy for Radioactive Discharges 2001-2020. Available at: https://webarchive.nationalarchives.gov.uk/20090731144513/http://www.defra.gov.uk/environment/radioactivity/government/discharges/pdf/rad_dischargestrat1.pdf
[43] UK Strategy for Radioactive Discharges 2009. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/249884/uk_strategy_for_radioactive_discharges.pdf
[44] UK Strategy for radioactive discharges: 2018 review of the 2009 strategy. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/718723/2018Rev2009UKStratRadDischargeFin.pdf

- to implement the UK's obligations, in respect of the RSS;
- to provide a clear statement of government policy, as outlined in this document, and a strategic framework for discharge reductions, sector by sector, to inform decision making by industry and regulators.

7.12 To monitor discharges, the environment agencies and other regulators undertake independent monitoring of radiation in the environment, which is collated and analysed by the Centre for Environment, Fisheries and Aquaculture Science (CEFAS), and reported annually in the *Radioactivity in Food and the Environment (RIFE) reports*.[45] The most recent report as of 2020 (RIFE26) found that exposure of the public from all sources of human-made radioactivity in food and the environment was low and well within the legal limit of 1 mSv per year. Overall, between 2019 and 2020 there were no major changes to the radioactivity measured in food and the environment.

How radioactive liquid and gaseous discharges are regulated

7.13 Discharges are made by industry, nuclear licensed sites, hospitals, and other facilities in accordance with the limits and conditions specified in permits granted by the environment agencies. Radioactive discharges are regulated under EPR16[46] in England and Wales, EASR18[47] in Scotland, and RSA93[48] in Northern Ireland, to ensure that dose levels to members of the public remain well below the statutory limit and constraints, and that protection of both human health and the environment is optimised.

7.14 As set out in chapter 5 paragraph 5.4, exposure to all sources of ionising radiation, including exposure from gaseous and liquid discharges, must be kept within dose limits. The dose limits on exposure to ionising radiation applied in the UK are derived from international recommendations from the ICRP and the IAEA and are set out in EPR16, EASR18, IRR17, IRR(NI)17[49] and the Radioactive Substances (Basic Safety Standards) Regulations (Northern Ireland) 2003.[50]

7.15 Some discharges, due to their lower level of radioactivity and potential low risk, may not require full regulatory control. In line with the graded approach, the different regulatory frameworks within the UK have tiers of authorisation below a permit. These include

[45] Radioactivity in Food and the Environment (RIFE) reports. Available at: https://www.gov.uk/government/publications/radioactivity-in-food-and-the-environment-rife-reports
[46] The Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made
[47] The Environmental Authorisations (Scotland) Regulations 2018. Available at: https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents
[48] Radioactive Substances Act 1993. Available at: https://www.legislation.gov.uk/ukpga/1993/12/contents
[49] The Ionising Radiations (Northern Ireland) Regulations 2017. Available at: https://www.legislation.gov.uk/nisr/2017/229/made
[50] The Radioactive Substances (Basic Safety Standards) Regulations (Northern Ireland) 2003. Available at: https://www.legislation.gov.uk/nisr/2003/208/contents/made

notifications, registrations, general binding rules (Scotland) and exemptions (England, Wales, and Northern Ireland).

7.16 Below certain dose levels, the radiological risk to the public is considered too low to warrant further mitigation by operators so long as BAT/BPM is used. These levels are called thresholds for optimisation. Thresholds for optimisation are a UK-specific concept based on dose levels: 0.02 mSv per year in Scotland and Northern Ireland and 0.01 mSv per year in England and Wales. Below these levels, the regulators will not seek further reduction in public exposures, as long as they are satisfied that BAT/BPM is being applied by the operators to protect the public.

This chapter sets out the UK Government's and devolved administrations' policy on radioactive liquid and gaseous discharges. The policy is not new. It is intended to reflect existing policy, practice and the regulatory framework.

3. Do you think that the draft policy statement on radioactive liquid and gaseous discharges accurately reflects existing policy, practice and regulation? Please provide the reasoning behind your response.

4. Do you have any suggestions on how to improve this chapter on radioactive liquid and gaseous discharges? Please provide the reasoning behind your response.

8

Managing solid radioactive waste in the nuclear and non-nuclear sectors

Introduction

8.1 This policy statement replaces:

- Policy for the long-term management of solid low level radioactive waste in the United Kingdom (2007);
- The UK Government's policy, Implementing geological disposal – working with communities: An updated framework for the long-term management of higher activity radioactive waste (2018);
- Implementing geological disposal: A framework for the long-term management of higher activity waste (2014), which up until this point was extant policy in Northern Ireland;
- Welsh Government Policy on the Management and Disposal of Higher Activity Radioactive Waste (2015);
- The Welsh Government's policy, Geological disposal of Higher Activity Radioactive Waste: Working with Communities (2019).

8.2 Policy on managing radioactive waste is devolved. There is a large degree of consistency in the policies of our four nations for managing solid radioactive waste. However, there are some differences. Where this is the case, we refer to or summarise the differences in the main body of this document and set out in full the separate policies in appendices. The Scottish Government's policy, Scotland's Higher Activity Radioactive Waste Policy 2011, is in Appendix 1. The UK Government's Working with Communities policy is in Appendix 2. The Welsh Government's Working with Communities policy is in Appendix 3.

8.3 The UK Government's and devolved administrations' policies on managing solid radioactive waste are based on the same basic principles that apply more generally to environmental policy and set out expectations in relation to:

- sustainable development;
- decisions being based on the best possible scientific information and analysis of risks;

- the precautionary principle;
- the polluter pays principle;
- application of the waste hierarchy.

8.4 In addition, the UK Government and devolved administrations expect those who own, produce and manage radioactive waste to consider how they can deliver net carbon zero emissions from radioactive waste management activities. This also applies to the development of new stores, treatment, or disposal facilities.

8.5 Opportunities to develop further innovative approaches to solve future challenges in all aspects of managing radioactive waste should also be taken.

Scope of the policy

8.6 The policy statement covers all aspects of the generation, management, and regulation of solid radioactive waste, which is included within the scope of the radioactive substances regulations (see chapter 5).

8.7 The policy statement does not cover radioactive waste that is excluded from radioactive substances legislation because it is of low radiological risk to health and the environment (see Figure 3). However, such waste may still be subject to conventional waste regulations and transport regulations and must be managed in accordance with those requirements.

8.8 Nuclear materials, including spent nuclear fuel, uranium and plutonium, are not classified as radioactive waste whilst a future use for them is foreseen by the owner of the material. Policy on nuclear materials is set out in chapter 11. Should the view of the owners change in relation to specific material, their management would fall within the scope of this policy statement.

8.9 The policy is relevant to those organisations responsible for the production, management, and regulation of radioactive waste. This includes the NDA and its subsidiaries and site licence companies, the Ministry of Defence, other radioactive waste producers and owners in the nuclear and non-nuclear sectors, owners and operators of waste management facilities including existing and proposed treatment, storage and disposal facilities, the regulatory bodies and planning authorities.

8.10 Where relevant, waste producers and owners should take into account developments in the joint UK Government's and devolved administrations of Scotland and Wales's policy for the decommissioning and clean-up of the UK's nuclear facilities. This is discussed in chapter 9. Northern Ireland does not have any nuclear facilities and the policy for the decommissioning and clean-up of such facilities does not apply in Northern Ireland.

8.11 Waste producers and owners, and organisations responsible for the management of radioactive waste, should also take into account relevant developments in the policies for the management of radioactive sources, discharge of liquid and gaseous radioactive waste, and import and export of radioactive waste and spent fuel which are set out in chapters 6, 7,10 and 11 respectively.

8.12 Management of radioactively contaminated land is not covered in this policy framework. However, the management of any radioactive waste that is generated from activities to remediate contaminated land should be managed in accordance with this policy.

Aim of the policy

8.13 The policy provides a high-level framework within which decisions can be taken by those who produce, own, or manage solid radioactive waste on a case-by-case basis to ensure safe, secure, environmentally acceptable, and cost-effective solutions for the management of solid radioactive waste. These decisions should also demonstrate value for money and be appropriate and proportionate to the risk posed to people's health and the environment by the properties (radiological, chemical, and physical) of the waste concerned.

8.14 There is a diverse range of radioactive waste types, and levels of associated radioactivity as well as a range of chemical and physical properties. The policy therefore does not aim to be prescriptive. It is designed to provide flexibility to allow appropriate waste management solutions to be developed on a case-by-case basis.

8.15 The policy has the overall objective of reducing the hazard and risk of managing solid radioactive waste to people and the environment to as low as is reasonably achievable taking account of social and economic factors. This is consistent with the principle of optimisation of protection of people when managing radioactive substances and is broadly aligned with ICRP recommendations and IAEA standards guidance.

Risk-informed decision-making

8.16 A risk-informed approach should be used as a decision-making framework for the management of all solid radioactive waste by those responsible for creating and managing solid radioactive waste. A risk-informed approach means considering the properties of the waste (radiological, chemical, physical), the hazard these properties pose to people and the environment and the risk of harm to people and the environment occurring from managing the waste. This means that radioactive waste management plans for current and future arisings of all solid radioactive waste should take into account the radiological and non-radiological properties (physical and chemical) and

should be used together with the radioactive waste classification. This approach should be adopted throughout the waste management lifecycle.

8.17 Consideration of the radiological, chemical and physical properties should be used to demonstrate that the waste is managed safely, securely and will have the best overall outcome for people and the environment. Any assessment of management options will be subject to robust regulatory scrutiny.

UK radioactive waste classifications

8.18 Radioactive waste is radioactive material for which no further use is foreseen. The definition of radioactive waste is set out in EPR16 in England and Wales, the RSA1993 in Northern Ireland, and EASR18 in Scotland.[51] See also chapter 5.

8.19 Within the UK, radioactive waste is classified in terms of the nature and quantity of radioactivity it contains and its heat-generating capacity. The classifications are used for the inventory of current and future arisings of radioactive waste from the nuclear industry and are used as part of the UK's international reporting obligations. The waste classifications across the full range of radioactive waste are broadly in line with international practice.

8.20 **Low level waste (LLW) -** waste having a radioactive content not exceeding four Gigabequerels per tonne of total alpha activity or 12 Gigabequerels per tonne of total beta/gamma activity. Within the LLW definition are additional sub-categories for low volume and high volume very low level Waste.

[51] The Environmental Permitting (England and Wales) Regulations 2016. Available at: https://www.legislation.gov.uk/uksi/2016/1154/contents/made; The Radioactive Substances Act 1993. Available at: https://www.legislation.gov.uk/ukpga/1993/12/contents; The Ionising Radiation Regulations (Northern Ireland) 2017. Available at: https://www.legislation.gov.uk/nisr/2017/229/contents/made and The Environmental Authorisations (Scotland) Regulations 2018. Available at: https://www.legislation.gov.uk/sdsi/2018/9780111039014/contents

Low Volume VLLW is defined as: radioactive waste which can be safely disposed of to an unspecified destination with municipal, commercial or industrial waste ("dustbin" disposal), each 0.1m³ of waste containing less than 400 kilobecquerels (kBq) of total activity or single items containing less than 40 kBq of total activity.

For waste containing carbon-14 or hydrogen-3 (tritium):

- in each 0.1m³ the activity limit is 4,000 kBq for carbon-14 and hydrogen-3 (tritium) taken together; and
- for any single item, the activity limit is 400 kBq for carbon-14 and hydrogen-3 (tritium) taken together.

Controls on disposal of this material, after removal from the premises where the waste arose, are not necessary.

High Volume VLLW is defined as: radioactive waste with maximum concentrations of four megabecquerels per tonne (MBq/te) of total activity which can be disposed of in specified landfill sites. For waste containing tritium, the concentration limit is 40MBq/te. Controls on disposal of this waste, after removal from the premises where the waste arose, will be necessary.

8.21 **Intermediate level waste (ILW) -** waste exceeding the upper boundaries for LLW, but which does not require heat generation to be taken into account in the design of storage or disposal facilities.

8.22 **High level waste (HLW) -** waste in which the temperature may rise significantly as a result of its radioactivity, so this factor has to be taken into account in the design of storage or disposal facilities.

8.23 In addition to the classifications set out above, the term "higher activity radioactive waste" is used by the Scottish Government in its 2011 policy statement (see Appendix 1). The Scottish Government's policy does not include HLW because there is no HLW in Scotland. Spent nuclear fuel and nuclear materials in Scotland continue to be transferred to and managed at Sellafield.

8.24 The UK Government and devolved administrations also often use the term "borderline (or boundary) waste" to describe waste which has a level of radioactivity close to the boundary between two waste categories, typically LLW/ILW.

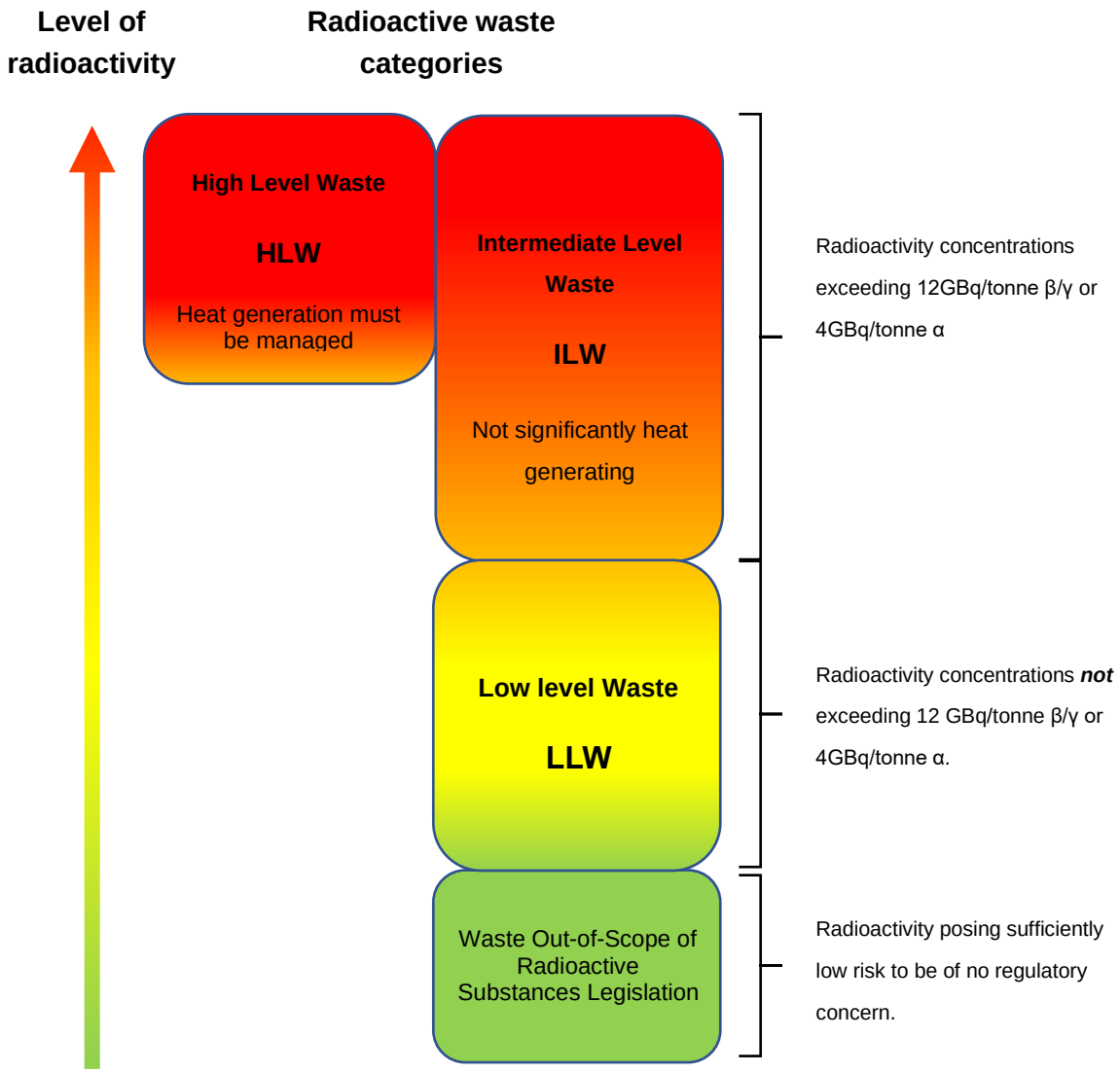


Figure 3. Classification of radioactive waste in terms of radioactivity and heat-generating capacity (ONR/SEPA/DESNZ).

Solid radioactive waste in the UK

8.25 Solid radioactive waste is produced from operational and decommissioning and clean-up activities in the nuclear and non-nuclear sectors. Currently, the majority of this waste is generated by the nuclear sites which are the responsibility of the NDA and EDF Energy. It includes a range of materials such as paper; plastics; scrap metal; reactor components; contaminated metals; organic materials; concrete; graphite and, disused sources from medical and industrial irradiators. It can also include wastes such as ion exchange resins and filter media, sludges, flocculants, and highly active liquor (HAL) from spent nuclear fuel reprocessing, all of which are managed as solid radioactive waste.

Solid LLW currently being generated in the UK consists largely of paper, plastics and scrap metal items that have been used in the nuclear industry and the non-nuclear sector such as hospitals, research establishments and the oil and gas industry. It can also occur through the extraction of the Earth's resources (such as for oil and gas) whereby the extraction processes accumulate naturally occurring radioactive materials (NORM) to a degree that their resultant concentrations are high enough to be classed in the UK as LLW.

8.26 As the decommissioning and clean-up programmes of nuclear sites and non-nuclear sector sites proceeds, the volume of LLW and VLLW will increase significantly. In particular, we anticipate that demolition of buildings on nuclear sites may result in large volumes of lightly contaminated rubble.

Solid ILW is generated from a range of facilities and activities in the UK mainly from the reprocessing of spent nuclear fuel and from operations at nuclear power stations. It can include metal items such as fuel cladding and reactor components, sludges (mostly from Magnox corrosion products and other metal corrosion products), and operational wastes such as ion-exchange resins and filter media, which are used to reduce the amount of radioactivity in liquid and gaseous discharges. Solid ILW is also produced to some extent during operational activities and the decommissioning and clean-up of non-nuclear sector sites such as disused sources from medical and industrial irradiators, and during the decommissioning of nuclear submarines.

8.27 As the decommissioning and clean-up programmes of nuclear sites proceeds, the volumes of ILW from decommissioning and dismantling Magnox and AGR reactor cores will increase significantly.

HLW currently arises only at Sellafield as a by-product of reprocessing spent nuclear fuel. It is initially a liquid (Highly Active Liquor (HAL)) containing very high levels of fission products. The HAL is concentrated and stored in a highly engineered containment plant prior to undergoing a process of vitrification whereby the HAL is incorporated in liquid glass to make it physically stable once solidified.

The regulation of solid radioactive waste

8.28 The management of all categories of solid radioactive waste is regulated by a number of bodies. The principal regulators are the environment agencies for England, Scotland, Wales and Northern Ireland, ONR at nuclear sites, and the HSE at non-nuclear sites in Great Britain and the HSENI in Northern Ireland.

8.29 Local Planning Authorities also have a regulatory role through the local planning system. Planning permission must be sought for the construction of facilities used for the storage of radioactive waste on nuclear and non-nuclear sites and the development of plans for the decommissioning and remediation of nuclear and non-nuclear facilities and their sites. Planning permission must also be sought from local planning authorities for most types of disposal facilities. Permission must also be sought in relation to proposals to transfer radioactive waste from other nuclear sites for interim storage on one site and potential on-site disposals.

8.30 On **nuclear licensed sites** in England, Scotland and Wales, the ONR regulates the on-site arising and storage of solid radioactive waste from a health and safety and security perspective. The EA (England) and NRW (Wales) regulate the disposal (including transfer) of solid radioactive waste to ensure the safety of the public and environmental protection. In Scotland, SEPA regulates the management of radioactive waste throughout its lifecycle from generation or receipt, to transfer and disposal. The ONR and environment agencies work closely together to ensure that people's health and the environment are protected during radioactive waste management activities and on matters relating to delicensing and clean-up of nuclear sites and other land contaminated by radioactivity.

8.31 The management of the diverse and complex range of solid radioactive waste across the various parts of the UK **non-nuclear sector** is regulated by the environment agencies, while the operational safety of these activities is regulated by the HSE in Great Britain and HSENI in Northern Ireland.

Minimisation of waste arisings and the role of the waste hierarchy

8.32 The waste hierarchy[52] (Figure 4) describes the principle of adopting options for managing waste that start with those that have least impact on the environment. Its application is central to the successful implementation of this policy. Application of the waste hierarchy should be an integral part of the design and implementation of radioactive waste management activities, including the development of integrated waste management strategies at nuclear and non-nuclear sites.

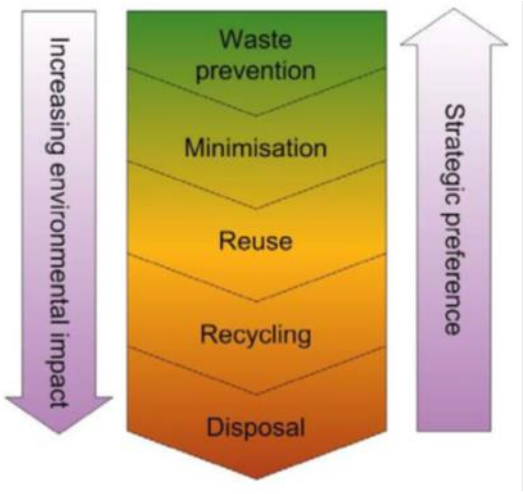


Figure 4. The waste hierarchy

8.33 The waste hierarchy should be used as a framework for decision-making for all solid radioactive waste across the UK. Effective application of the waste hierarchy, where practicable, should lead to the avoidance or minimisation of the production of radioactive waste including, for example, secondary radioactive waste produced during treatment or during decommissioning and clean-up activities.

Waste prevention

8.34 The objective should be to deal with potential radioactive waste arisings at the highest practicable level of the waste hierarchy. At its highest level this means that when making decisions during the design and operation of nuclear and non-nuclear facilities, and during decommissioning and clean-up activities, the principal aim will be to avoid the generation of waste.

[52] Defra (2011). Guidance on applying the Waste Hierarchy. Available at: https://www.gov.uk/government/publications/guidance-on-applying-the-waste-hierarchy

Waste minimisation

8.35 New facilities or plant that produce, use, or store radioactive waste should be designed, constructed, commissioned, and operated with waste minimisation and decommissioning in mind. This approach will ensure that the UK minimises the creation of decommissioning liabilities and associated radioactive waste which future generations would have to deal with.

8.36 Waste producers and owners should seek to reduce waste arisings (both by radioactivity and by volume) to the minimum wherever reasonably practicable. This should be achieved through the appropriate design and operation of processes; and reusing tools, equipment and facilities before they become waste. The choice of technique should be determined by the properties of the waste (radiological, chemical, physical). Techniques include:

- **waste characterisation** in order for the waste to be managed appropriately. This includes characterisation activities to support the reclassification of LLW to VLLW or out of scope if it can be demonstrated that the waste does not present a significant hazard because of its very low levels of radioactivity. Effective characterisation enables some waste currently classified as ILW to be re-classified as LLW, enabling earlier final management of the waste. It also supports recycling where the radioactive waste can be demonstrated to be out of scope of radioactive waste regulatory control if its levels of radioactivity fall below thresholds defined in radioactive substances legislation;
- **sorting and segregation** to enable management by the most appropriate management route by keeping types of waste or material (radioactive or exempt) separate on the basis of their radiological, chemical and/or physical properties. Segregation of wastes at source, where practicable, is preferred in order to reduce reworking of the waste; however, in some circumstances segregation in later waste management stages may be necessary;
- **decontamination** of facilities and materials including surface contamination removal, which can support re-use. Decontamination also supports segregation if surface contamination or hot spots can be removed, allowing the bulk item to be managed through an appropriate disposal route. For example, scabbling surface contaminated concrete off a structure. The secondary radioactive waste produced during the decontamination process should be managed appropriately.

Reuse

8.37 Opportunities for appropriate reuse of materials before they become waste should be explored. For example, plant, equipment, and buildings which are no longer needed for

their original intended purpose may continue to have value for alternative purposes. Waste producers and owners should seek to exploit these opportunities where practicable. Soil and rubble contaminated with VLLW and LLW may be reused on sites, for example in necessary landscaping and void filling. However, these activities require appropriate authorisations and permits and can currently have an impact on delicensing of nuclear sites. Consideration will need to be given to the site end state (see chapter 9), as well as the suitability of the material intended for re-use on the site.

Recycling

8.38 Recycling materials for further use presents a significant opportunity to both the nuclear and non-nuclear sectors. Recycling can involve treatment and conditioning techniques such as:

- surface decontamination;
- metal smelting;
- crushing or grading (to enable re-use of concrete, for example).

8.39 When considering recycling options, waste producers or owners must make a BAT/BPM case to confirm the validity of the option for a specific waste stream.

Minimising the remaining quantities of radioactive waste

8.40 Hazard and risk reduction and nuclear safety priorities may limit, but not eliminate, application of the waste hierarchy in certain circumstances. For example, some techniques to minimise waste creation may be too technically difficult or could result in unacceptably high doses of radiation to the workforce.

8.41 Where solid radioactive waste cannot be managed at higher levels in the waste hierarchy, disposal may be the only option. Such disposals should be achieved in the optimal way, by applying BAT/BPM, in order to minimise the impact on the environment of those disposal activities. Disposal of solid radioactive waste is discussed from page 58 onwards.

8.42 Techniques for minimising the remaining quantities of radioactive waste requiring disposal can include further waste characterisation, sorting and segregation and decontamination, including removal of surface contamination. These techniques could also include:

- Treatment;
- size reduction;
- thermal treatment, including incineration, under appropriately regulated circumstances. Here, suitable wastes can be treated by incineration or other

thermal techniques to destroy the organic component of the waste and reduce its volume. In addition to benefits such as volume reduction, thermal treatment produces vitrified products that are inherently inert, high integrity and stable and as such could be an option to treat problematic waste feeds;

- metal smelting;
- compaction, including super-compaction, whereby wastes are compacted within drums or boxes to reduce the volumes of waste for disposal;
- decay storage.

8.43 The remaining solid radioactive waste should be safely disposed of through the use of:

- conditioning and immobilisation;
- packaging.

Radioactive waste management lifecycle

8.44 Radioactive waste should be managed safely and compliantly throughout its lifecycle, from the initial planning and preparation stage, through generation, treatment, and packaging, to storage and disposal (Figure 5).

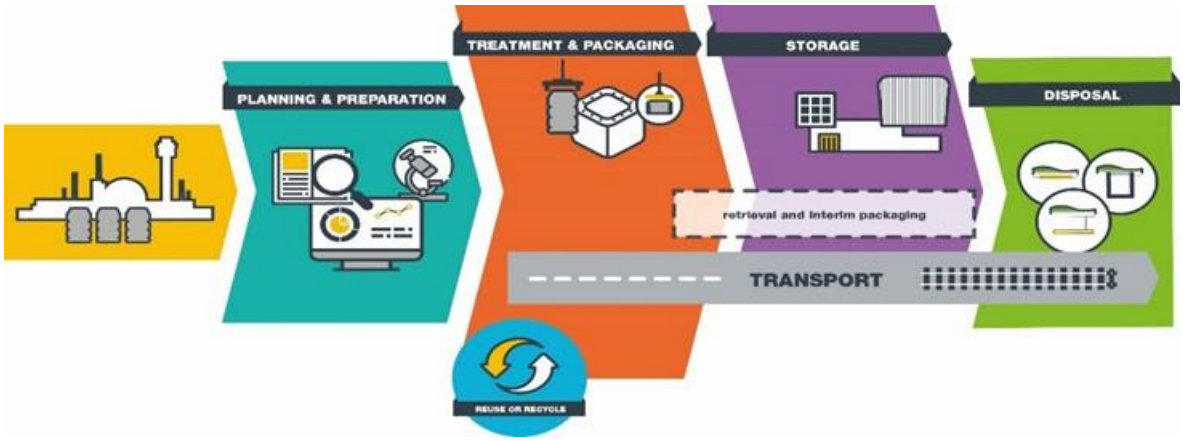


Figure 5. Radioactive waste management lifecycle (Source: NDA).

Planning and preparation

8.45 Early planning and preparation for the management of radioactive waste should be carried out to prevent waste being generated. It should then be an ongoing, iterative process throughout the waste management lifecycle. For planning and preparation to be successful, it is essential that there is a good understanding of the waste and materials that need to be managed throughout the waste management process.

Treatment and packaging

8.46 The policy of the UK Government and devolved administrations is that treatment and packaging should be used to process the waste into a form suitable for both storage and disposal. This phase of the waste management lifecycle typically could include a number of phases; from characterisation of the waste, undertaking techniques such as sorting and segregation, decontamination and treatment and conditioning, before packaging of the waste.

UK Government and devolved administrations of Wales and Northern Ireland (HLW, ILW and LLW not suitable for disposal in current facilities)

8.47 For HLW, ILW and LLW not suitable for management and disposal in current facilities, early conditioning of this waste should be carried out where practicable to reduce its hazard and make it passively safe so that it is physically and chemically stable. That is, the waste is immobilised and the need for maintenance, monitoring or other human intervention is minimised. The waste should be packaged in such a way that it can be securely stored in a manner which minimises the need for control and safety systems pending the availability of a suitable disposal facility or for further conditioning.

8.48 Nuclear Waste Services (NWS)[53] provides advice to waste producers on the compatibility of their waste conditioning proposals with future disposal to avoid the need for repackaging and the 'double handling' of HLW, ILW and LLW not suitable for disposal in current facilities. This is undertaken using an established process, which is subject to scrutiny by the ONR and the relevant national environment agencies. A system of robust storage arrangements, together with advice on disposal, provides confidence that packages will be disposable at the end of the storage period.

Storage

8.49 At all stages in the radioactive waste lifecycle, the waste should be stored safely and securely to meet regulatory and legal requirements.

8.50 Storage facilities should provide for the waste's containment with the intention of retrieval for a number of reasons, including supporting conditioning, treatment and/or disposal. Where radioactive waste cannot be disposed of immediately, the waste should be stored until a treatment and/or a suitable disposal route becomes available. Radioactive waste should be conditioned to a passively safe condition as soon as reasonably practicable. By exception containerised unconditioned radioactive waste may be stored in modern interim storage facilities where it is justified as the ALARA and BAT/BPM option, for example where there is an imperative to progress with hazard

[53] Formerly Radioactive Waste Management Ltd (RWM).

reduction. The decision on whether unconditioned waste storage is appropriate is a regulatory one and will be taken on a case-by-case basis.

8.51 The types of storage options available include short term storage (buffer storage), interim storage, and decay storage. Decay storage enables waste producers to take advantage of radioactive decay to allow a specified retrieval or treatment step, or to allow a change in disposal route. This management step can occur at the outset of packaging for storage, or it can be a management step that is selected after a period of interim storage.

Disposal

8.52 Disposal is the final stage in the waste management lifecycle and involves the emplacement of waste in a suitable facility with no intent to retrieve it. Disposal is discussed in more detail from page 58.

Presumption towards early solutions for all solid radioactive waste in England Wales and Northern Ireland and LLW in Scotland

8.53 When preparing programmes and plans for the management of solid radioactive waste generated during operational and decommissioning activities, there should be a presumption by the waste producer or owner towards management solutions which can be implemented sooner rather than later. Early solutions do not necessarily equate to early disposal. For example, interim storage can enable waste producers to take advantage of radioactive decay or waste evolution pending disposal. This might include enabling a specified retrieval or treatment step, or to allow a change in disposal route.

8.54 The objective should be to put solutions such as decay storage in place prior to the implementation of programmes and plans wherever possible. Where this is shown not to be possible, or it would be inappropriate, any interim management of waste will need to be conducted in a manner that meets regulatory requirements. This includes taking account of the agreed disposal route(s) identified from the options assessments required by the regulatory bodies. Such an approach will contribute to the achievement of intergenerational equity.

8.55 The UK Government and devolved administrations expect the NDA to continue to promote and support new initiatives where they add real value to the NDA's decommissioning and waste management activities. The NDA should continue to invest in research and development to address the challenges of radioactive waste management and to track and benchmark international developments, including collaborating with other countries to share good practice.

Management of HAW in Scotland

8.56 Scotland's Higher Activity Radioactive Waste Policy 2011 provides the framework for the long-term management of higher activity radioactive waste arising in Scotland and is not prescriptive in its approach. The Scottish Government's HAW policy is laid out in full in Appendix 1.

The transport of radioactive waste as applied to all solid radioactive waste in England, Wales and Northern Ireland and LLW in Scotland

8.57 The UK Government and devolved administrations expect transport to be explicitly considered when options assessments are carried out to support the development of radioactive waste management plans (see paragraphs 8.61 to 8.67). This should take into account the volumes and radioactivity of the waste as well as the distance over which it will need to be transported for each option. Consideration should also be given to the alternatives to long distance transport where possible, in particular, in relation to the large quantities of soil and rubble contaminated with low levels of radioactivity that will arise from large nuclear site decommissioning and clean-up activities. However, while the desire to avoid excessive transport of radioactive waste is an important consideration, it must be balanced with all other relevant factors on a case-by-case basis.

8.58 Use of centralised facilities for the treatment (including smelting, surface decontamination, incineration) of solid radioactive waste may be appropriate where this option would provide a more sustainable or cost-effective solution than developing treatment facilities on individual sites. It may also be appropriate to consolidate radioactive waste into a central or regional treatment or storage location, for example, where there are security benefits, or it makes optimal use of existing infrastructure. Such an option will require planning permission from planning authorities.

8.59 UK regulations concerning the transport of radioactive materials are consistent with IAEA guidance. The UK Government and devolved administrations believes these regulations have provided a safe environment for the transport of radioactive waste in the past and will continue to do so into the future.

The proximity principle and transport of waste as applied to HAW in Scotland

8.60 Scottish Government HAW policy requires long-term management options to take account of the proximity principle. The Scottish Government's HAW policy is laid out in full in Appendix 1.

Radioactive waste management plans

8.61 All **nuclear licensed sites** should have radioactive waste management plans that are supported by the forecasting of all waste arisings, and which take account of the radiological, chemical, and physical properties of the waste. The plans should demonstrate how waste is minimised throughout its lifecycle and that the chosen management option gives the optimal outcome for people and the environment as a whole and is compatible with the proposed end-state for the site. These plans must be prepared in a form, and to a level of detail, suitable for consideration by the relevant regulatory bodies. Preparation of the plans should be based on an assessment of all practicable options for waste management. Any implementation of options should be subject to a satisfactory risk assessment and optimisation study, as required by the relevant regulatory bodies.

8.62 Nuclear site operators are also expected to fulfil the requirements for release from radioactive substances regulation when developing their plans for the management of radioactive waste from decommissioning nuclear licensed sites.[54] This includes demonstrating how implementing these plans will leave sites in a state suitable for release from radioactive substances regulation.

8.63 The **non-nuclear industry** covers all radioactive waste production that does not come from defence and civil nuclear licensed sites. It includes the oil and gas sector, other industries and organisations such as hospitals and pharmaceutical companies, research, and educational establishments. These organisations generally produce radioactive waste of lower activity concentrations and amounts than that produced by the nuclear industry. Non-nuclear sector sites should prepare radioactive waste management plans, required by the relevant environment agency, that are proportionate to the scale of their waste production and holdings, and the risks posed by the waste's radiological, chemical, and physical properties. The radioactive waste management plans should take into account all current and anticipated future arisings and their radiological, chemical, and physical properties.

8.64 For both the **nuclear and non-nuclear sectors** the waste management plans must be developed with appropriate regulatory and stakeholder involvement. They should take into account current good practice, including applying the learning and synergies between the nuclear and non-nuclear sectors, the underpinning research activities at national laboratories and universities, and international experience. The plans should be regularly reviewed and updated. As a general principle, such plans should be developed in advance of the production of any new solid radioactive waste-streams.

[54] SEPA, Environment Agency and Natural Resources Wales (2018). Management of radioactive waste from decommissioning of nuclear sites: Guidance on Requirements for Release from Radioactive Substances Regulation. Available at: https://www.sepa.org.uk/media/365893/2018-07-17-grr-publication-v1-0.pdf

Consultation and public involvement in radioactive waste management plans

8.65 Nuclear operators' proposed programmes and plans for the management and disposal of solid radioactive waste should be developed by including wide stakeholder engagement.

8.66 Engagement should involve local authorities and communities which may be impacted by the plans, including any host community in the vicinity of a waste treatment, storage or disposal facility. When environment agencies consult on applications to dispose of solid radioactive waste from nuclear sites, they should take account of operators' consultations and adopt a proportionate approach. Non-nuclear operators do not generally need to consult the public on their radioactive waste management plans. However, the regulators' consideration of any applications for an authorisation to dispose of solid radioactive waste from non-nuclear producers can include consultation.

8.67 Guiding principles that should apply to such consultations are:

- provision for early local community input into the decision-making process;
- openness and transparency at all stages;
- provision of well prepared, good quality, accurate and easily understandable briefing material;
- use of an iterative consultation process where appropriate.

Disposal

Disposal facilities for solid radioactive waste

8.68 Solid radioactive waste can range from waste that can be safely disposed of in conventional landfill sites, to items that need to be isolated and contained underground in highly engineered disposal facilities. It is the policy of the UK Government and devolved administrations to make the best practicable use of resources, by encouraging the disposal of radioactive waste to facilities designed to provide the isolation and containment of radioactive waste appropriate to the hazard posed by that waste, so that people and the environment are protected. It is therefore important to have a range of disposal facilities available for waste owners and waste producers.

8.69 In the UK there is a range of disposal facilities available for radioactive waste from both the nuclear and non-nuclear sectors. More will need to be developed in the future, in order to dispose of the radioactive waste that has accumulated since the 1950s, and as more of our nuclear, oil and gas and other non-nuclear facilities are decommissioned. The disposal facilities range from those that could accept the most hazardous radioactive waste that needs to be isolated and contained for many hundreds of

thousands of years in order to protect people's health and the environment, to facilities where no special controls are necessary, which are suitable for less hazardous radioactive waste.

8.70 Each disposal facility will have waste acceptance criteria. The waste acceptance criteria set out the characteristics of the waste that can be disposed of at that particular facility. The environment agencies have published guidance[55, 56] on their requirements for the authorisation of disposal facilities. The UK Government and devolved administrations expect the environment agencies to periodically review their guidance to ensure it remains up to date. The regulation of disposal facilities is discussed in more detail in paragraphs 8.128 to 8.137.

8.71 The disposal options currently available to waste producers include:

- landfill sites or disposal on site for the least hazardous LLW;
- specialised near surface disposal facilities for LLW that is not suitable for disposal at municipal or permitted landfill sites, such as the LLWR in Cumbria and the Dounreay Low Level Waste Facility (LLWF) in Scotland.

Planned and potential future disposal facilities for solid radioactive waste

8.72 In future more disposal capacity will be needed. The UK Government and the Welsh Government have already set out processes for identifying a suitable location for a geological disposal facility in either England or Wales. More near surface disposal facilities, similar to the LLWR, could also be developed across Great Britain for the disposal of ILW. Scotland has already set out its strategy to develop near surface disposal facilities for decommissioning some waste from nuclear sites.

8.73 The policy of the UK Government and devolved administrations is to enable and encourage waste producers and waste owners to dispose of their radioactive waste in an optimal manner, that takes account of the radioactive and non-radioactive properties of the waste. Waste producers should consider the properties of the waste and the waste acceptance criteria for disposal facilities to enable them to choose the optimal disposal route for their waste. This is necessary to ensure that the best use of disposal capacity is made across the UK as decommissioning and clean up progresses across the nuclear and non-nuclear sectors.

[55] EA, SEPA & NIEA (2009) Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Available at: https://www.gov.uk/government/publications/near-surface-disposal-facilities-on-land-for-solid-radioactive-wastes

[56] EA & NIEA (2009) Geological Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Available at: https://www.gov.uk/government/publications/geological-disposal-facilities-on-land-for-solid-radioactive-wastes

Geological disposal

8.74 It is the policy of the UK Government and devolved administrations of Wales and Northern Ireland to manage the UK's most hazardous radioactive waste through geological disposal. A search for a suitable location for a geological disposal facility (GDF) is taking place in England and Wales only. The Scottish Government is not participating in the geological disposal programme. HLW is generated in England only.

8.75 The decision of the UK Government and devolved administrations of Wales and Northern Ireland to implement geological disposal follows a recommendation by the Committee on Radioactive Waste Management (CoRWM). Between 2003 and 2006, CoRWM considered a wide range of options on how to deal with the UK's most hazardous radioactive waste, from indefinite storage on or below the surface through to propelling waste into space. In July 2006, CoRWM recommended that geological disposal, coupled with safe and secure interim storage, was the best available approach for the long-term management of the UK's most hazardous radioactive waste. CoRWM continues to recommend that geological disposal is the best available option for disposing of the UK's most hazardous radioactive waste.

8.76 A GDF isolates the waste deep underground to protect people and the environment from harm. It involves isolating radioactive waste deep inside a suitable rock formation to ensure that no harmful quantities of radioactivity ever reach the surface environment. This is achieved through the use of multiple barriers that work together to provide protection over hundreds of thousands of years (see Figure 6). It is not a case of simply depositing waste underground. The multiple barriers that provide safety for geological disposal are a combination of the:

- form of the radioactive waste itself - for example, liquid HLW is converted into a durable, stable, solid glass form before storage and disposal;
- packaging of the waste;
- engineered barriers (buffers) that protect the waste packages and limit the movement of radionuclides if they are released from the waste packages;
- engineered features of the facility that the waste packages are placed in;
- stable geological setting (rock) in which the facility is sited.

8.77 There is general agreement internationally that geological disposal provides the safest long-term management solution for the most hazardous radioactive waste. Other countries that are progressing plans to implement geological disposal include Canada, Finland, France, Switzerland, Sweden and the United States of America.

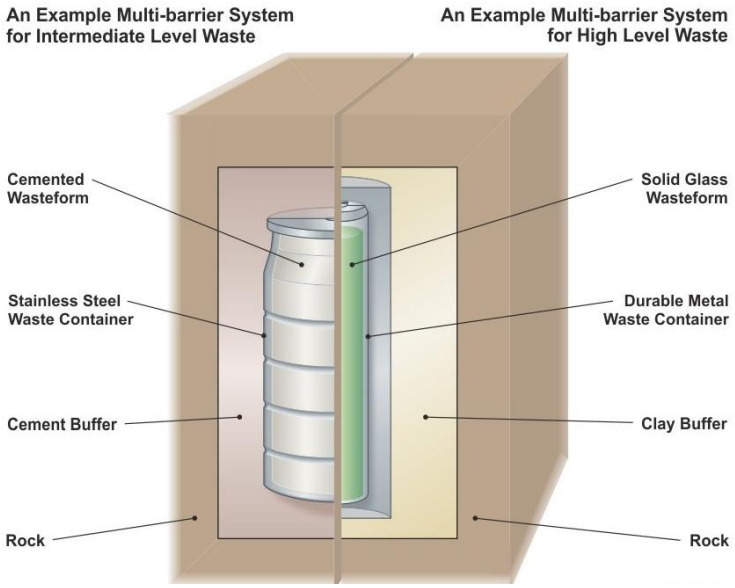


Figure 6. Multi-barrier system (Source: NDA)

Facility design

8.78 A GDF will have both surface and underground facilities. They will be linked by access tunnels and/or shafts, depending on the layout of these facilities. The underground facilities do not need to be located directly below the surface facilities – they could be separated by a distance of several kilometres and could be located under the seabed of the UK's territorial sea.

8.79 The precise layout and design of the facilities will depend on the inventory for disposal and the specific geological characteristics at the site in question. An artist’s impression of one potential layout of a GDF can be seen in Figure 7.

8.80 Once a GDF is eventually closed, it will no longer require any human intervention (although the surrounding environment could still be monitored for as long as society decided it was necessary). This avoids placing the burden of dealing with this waste on future generations.

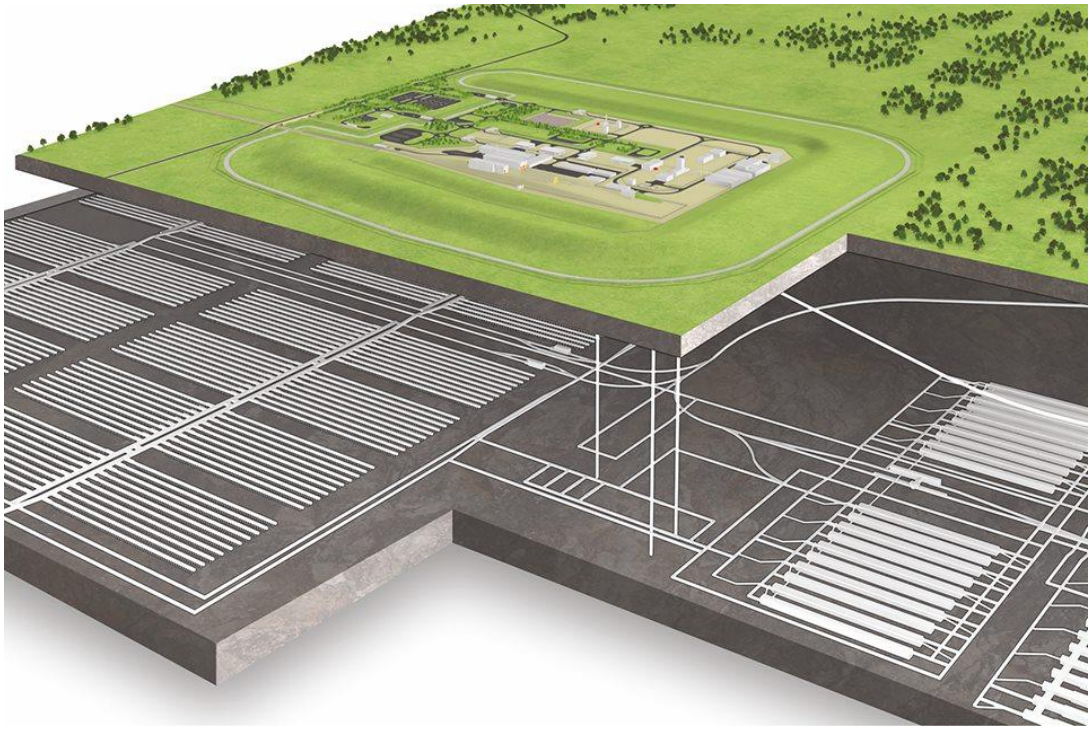


Figure 7. Artist's impression of a possible GDF lay out (Source: RWM)

Inventory for disposal

8.81 The specific types of radioactive waste (and nuclear materials that could be declared as waste) which would comprise the inventory for disposal in a GDF are:

- HLW waste arising from reprocessed spent nuclear fuel at Sellafield;
- ILW arising from existing nuclear licensed sites, defence, medical, industrial, research and educational facilities that is not suitable for disposal in near surface facilities;
- the small proportion of LLW that is not suitable for disposal in near surface facilities;
- spent fuel from existing commercial reactors (yet to be declared waste) and from research reactors that is not reprocessed;
- spent fuel (yet to be declared waste) from new nuclear projects (including small modular reactors);

- spent fuel (yet to be declared waste) from advanced modular reactors if it is suitable for disposal in a GDF;
- ILW from new nuclear projects not suitable for disposal in near surface facilities;
- plutonium inventory (yet to be declared waste) – either as spent fuel following reuse or in an immobilised form suitable for geological disposal;
- uranium stocks – including that arising from enrichment and fuel fabrication activities and reprocessing activities (yet to be declared waste); and
- irradiated fuel and nuclear materials (yet to be declared waste) from the UK defence programme.

8.82 As component parts of the inventory for disposal in a GDF it is not expected that the categories of waste and material listed above will change significantly. For the purposes of discussions with communities that are considering hosting a GDF, this description provides the most complete picture of the possible inventory for disposal at this point in time. If, however, the list of waste and materials were to change significantly it would need to be discussed with the potential host community for a GDF. A process for agreeing any future material changes to the categories of waste to be disposed of in a GDF would need to be agreed before the community took a decision on whether or not it wishes to host a GDF.

8.83 At this stage in the programme, where actual site investigations are yet to take place, there is no guarantee that a community willing to host a GDF would have a large enough volume of suitable rock to take the entire inventory for disposal, or that the developer would be able to make a safety case for the entire inventory. Whilst we are currently proceeding on the assumption that only one GDF will be necessary (subject to the safety case meeting the requirements of the independent regulators), if either of the above scenarios came to pass, one community might host a GDF to dispose of part of the inventory only, and an alternative site could be identified and developed elsewhere to dispose of the remainder. The UK Government favours an approach where one GDF will provide the capacity needed for the disposal of the inventory described in paragraph 8.81 above.

8.84 The volumes of this radioactive waste and materials are regularly assessed, revised and made publicly available as part of the UK Radioactive Waste Inventory (UK RWI).[57] Volumes are subject to change due to a number of factors, including improvements to the estimates of waste that will arise from planned operations and decommissioning programmes.

[57] UK Radioactive Waste Inventory (NDA) (2022). Available at: https://ukinventory.nda.gov.uk/

Funding for the GDF programme

8.85 A GDF will be a major infrastructure project and a significant long-term investment for the UK. The precise costs of developing a GDF will depend on a number of factors, including the type of rock in which the facility is constructed and exactly how long it operates before being closed. The costs of the development and operation of a GDF will be met by the waste owners.

8.86 In the case of waste from existing public sector civil nuclear sites, these are public liabilities owned by the NDA, and so the costs in connection with these are met by the UK Government. The same applies to waste owned by the Ministry of Defence. Any private companies (in both the nuclear and non-nuclear sectors) that produce radioactive waste for disposal in a GDF need to meet their full share of waste management and disposal costs. This includes operators of any new nuclear power projects.

8.87 Certain spent fuel and radioactive waste liabilities arising from the eight stations originally owned by British Energy Group Plc, and currently managed by EDF Energy, will be covered by the public sector via the Nuclear Liabilities Fund (NLF). This includes some liabilities in respect of material that may in future be classified as waste to be disposed of in the GDF.

8.88 Operators of new nuclear power stations are required by law to have a Funded Decommissioning Programme (FDP) approved by the Secretary of State before nuclear-related construction can begin. Alongside the approval of an operator's FDP, the UK Government will expect to enter into a contract with the operator regarding the terms on which the UK Government will take title to and liability for the operator's spent fuel and intermediate level waste. In particular, this agreement will need to set out how the price that will be charged for this waste transfer will be determined. The waste transfer price will be set at a level consistent with the UK Government's policy that operators of new nuclear power stations should meet their full share of waste management costs.

Identifying a site for a GDF

8.89 A process is underway to identify a suitable location for a GDF with a willing community in England and Wales. RWM, part of Nuclear Waste Services, is responsible for implementing geological disposal. The process for identifying a suitable location for a GDF in England is set out in Appendix 2 and the process for Wales is set out in Appendix 3. They are very similar community consent-based processes and require RWM to work in partnership with local authorities and other members of the community. They set out how:

- investment is provided to communities that participate in the process;

- communities can withdraw from the process;
- a positive Test of Public Support must be undertaken by the Potential Host Community before the construction and operation of a GDF can take place.

Ongoing research and development

8.90 In recommending geological disposal as the best available approach for the long-term management of the UK's most hazardous radioactive waste, CoRWM also recommended a commitment to a programme of research and development, and that developments in alternative management options should be actively pursued. Other long-term management options could emerge as practical alternatives to geological disposal for some waste in future. The NDA and RWM continue to review appropriate solutions including learning from and engaging with overseas programmes, which could have the potential to improve the long-term management of some of the UK's radioactive waste. Through this work the NDA has identified that it would be feasible to dispose of some less hazardous ILW in near surface facilities. Near surface disposal for ILW is discussed in paragraphs 8.106 to 8.118. At the moment no credible alternatives have emerged that would accommodate all of the categories of waste in the inventory for disposal and it is clear that a GDF will remain necessary for some types of radioactive waste.

Retrievability

8.91 The UK and Welsh Governments and regulators agree that the purpose of a GDF is ultimately to dispose of waste, not to store it.

8.92 During the operational stage of a GDF (when waste is being accepted), waste that has been placed into a GDF could be retrieved if there was a compelling reason to do so. Current RWM forecasts show that a GDF could be open for construction and waste emplacement for around one hundred years, to accommodate the current volume of legacy waste. Retrieving emplaced waste would tend to become more difficult with time, particularly after the end of its operational stage (that is, once a GDF has been closed permanently).

8.93 Permanently closing a GDF at the earliest possible opportunity once operations have ceased provides for greater safety, greater security, and minimises the burden on future generations.

Geological disposal and the planning regime in England

8.94 GDFs, and the deep investigatory boreholes necessary to assess the suitability of potential sites for a GDF, fall within the definition of 'Nationally Significant Infrastructure Projects' (NSIPs) in the Planning Act 2008. This means that in England planning applications for the deep investigatory boreholes (deeper than 150m) and/or the GDF

will be made directly to the Secretary of State. The application will then be examined by the Planning Inspectorate, which will make a recommendation to the Secretary of State, before the Secretary of State makes a final decision.

8.95 Under the Working with Communities policy (set out in Appendix 2) RWM cannot apply for development consent for a GDF unless the community within the geographical area where it is proposed has indicated through a Test of Public Support that it is willing to host a GDF. The Test of Public Support is entirely separate to the development consent process. It does not prevent any member of the Community Partnership – and the host community – from making representations to the Planning Inspectorate while it is examining any application for development consent for geological disposal infrastructure.

Geological disposal and the planning regime in Wales

8.96 Planning is a devolved matter and any GDF in Wales would be subject to the planning system in Wales. The planning arrangements in Wales differ to those in England, and further consideration will need to be given to the planning issues affecting the potential siting of a GDF in Wales. The principal instrument of planning legislation governing the planning regime for a GDF in Wales is the Town and Country Planning Act 1990.

8.97 The general planning policy framework in Wales is provided by *Planning Policy Wales*[58] and various *Technical Advice Notes*[59] *and Minerals Planning Guidance Notes*[60]*.* Together they set the context for the preparation of Development Plans and for decision making in relation to all types of development proposals.

8.98 The Planning (Wales) Act 2015 introduced a modernised framework for the delivery of planning services in Wales. This includes a new category of development for the largest and most technically complex devolved planning applications for which Welsh Ministers would assume responsibility.

8.99 The new category of development for the largest infrastructure planning applications in Wales is called ‘developments of national significance’ (DNS). It is anticipated that periodic evaluation of the DNS process will be undertaken. This evaluation will include keeping under review the projects which qualify as DNS and the relevant thresholds that may be applicable.

[58] Planning Policy Wales. Available at: https://gov.wales/planning-policy-wales
[59] Technical Advice Notes. Available at: https://gov.wales/technical-advice-notes
[60] Planning policy and guidance: minerals and mining. Available at: https://gov.wales/planning-policy-and-guidance-minerals-and-mining

8.100 As is the case in England, the Welsh Government is clear that geological disposal can only proceed in Wales on the basis of the willing participation in discussions by a Potential Host Community or communities, the successful conclusion of those discussions and a positive result in a Test of Public Support. The discussions may last for 15 to 20 years and a planning application for a GDF would be made only after a positive Test of Public Support. Applications for planning approval for exploratory boreholes would be made during the discussion period and would, as part of the planning process, be subject to public consultation, as is the case in England.

8.101 Policy on the application of the planning regime to geological disposal in Wales is under development, however, the Welsh Government considers that it is important to give some clarity at this stage, both to communities in Wales which may be considering seeking discussions about potentially hosting a GDF, and to local planning authorities, about how the planning regime may be applied to a GDF.

8.102 Should a GDF be sited in Wales, it would be a major development which would accept and dispose of HLW, and ILW and LLW from Wales and England not suitable for disposal in other facilities. The Welsh Government considers that a GDF would be a major project and would need to be considered potentially as a DNS. The Welsh Government will not take any decisions about this until it has put forward specific and detailed proposals for consultation, and subsequently considered the results of that consultation.

Disposal facilities for intermediate level waste

8.103 ILW can range from radioactive waste that is very similar in nature and properties to LLW to very hazardous radioactive waste. The UK Government's and devolved administrations' policies for the long-term management of ILW allow for disposal in near surface facilities where it is safe to do so.

Scottish Government's policy on ILW

8.104 The Scottish Government's policy for long-term management of ILW is set out in *Scotland's Higher Activity Radioactive Waste Policy 2011*. The Scottish Government's policy is set out in full in Appendix 1.

8.105 As part of the programme of actions set out in the Scottish Government's HAW strategy,[61] work is being undertaken to evaluate Scotland's radioactive waste inventory and identify which waste may or may not be suitable for disposal using emerging near-surface disposal technologies, and to develop near surface disposal concepts suitable for waste arising in Scotland.

[61] Scottish Government (2016) Higher-activity radioactive waste: implementation strategy. Available at: https://www.gov.scot/publications/higher-activity-waste-implementation-strategy/

The policy of the UK Government and devolved administrations of Wales and Northern Ireland on ILW

8.106 The policy of the UK Government and devolved administrations of Wales and Northern Ireland is that less hazardous ILW may be disposed of in a near surface facility where it is safe to do so. More hazardous ILW will need the isolation and containment afforded by a GDF.

8.107 Disposing of less hazardous ILW in near surface disposal facilities can be a more cost-effective, yet no less safe, solution than a GDF. It can also be a more sustainable and equitable solution by potentially speeding up decommissioning of some sites and freeing up the land earlier for other uses. Near surface disposal has the potential to reduce the burden on future generations of managing some of the waste by reducing the need for prolonged storage, storage facility construction and maintenance, and possible waste repackaging.

Facility design for near surface disposal facilities for ILW

8.108 Currently our existing near surface disposal facilities are used solely for the disposal of LLW. A near surface disposal facility for ILW can be located at the surface or tens of metres below the ground.

8.109 A disposal facility at the surface for ILW would be very similar to the LLWR in Cumbria or the LLWF at Dounreay in Caithness. Waste packages would be stacked in engineered concrete vaults up to the approximate level of the surface. When the vaults

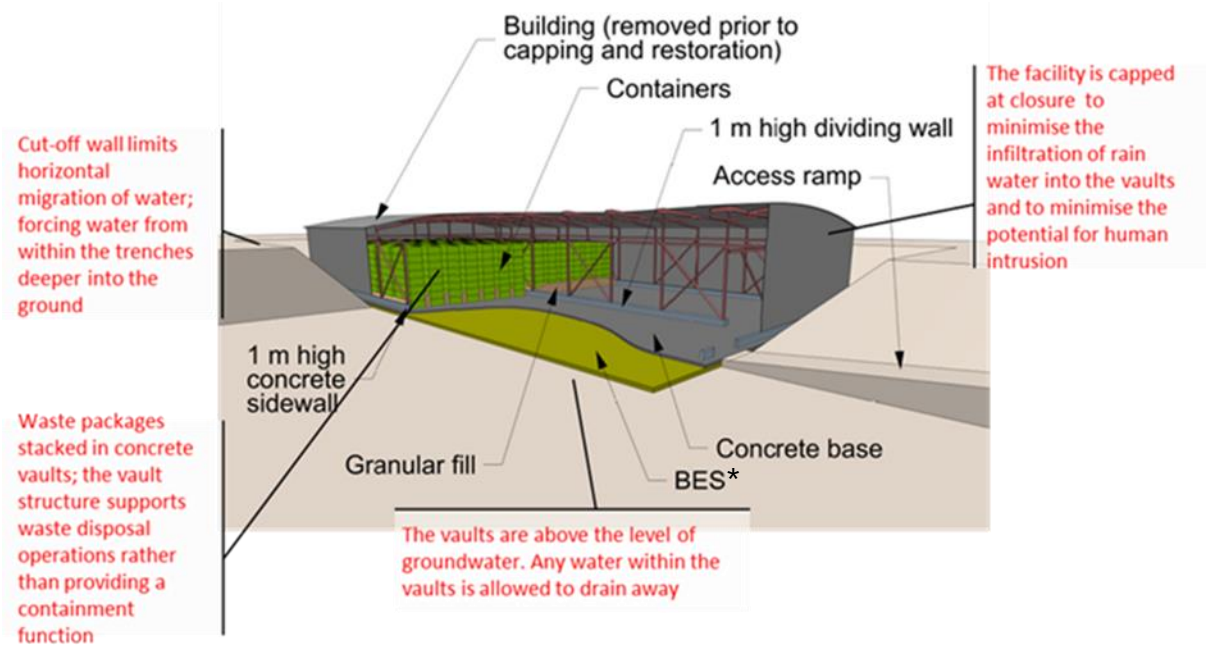


Figure 8. Artist's impression of the at surface concept for a near surface disposal facility for ILW (Source: NDA). BES = bentonite enhanced sand

are closed they would be covered with an engineered cap to prevent rainwater entering and any inadvertent intrusion. The barriers provided by the packaging of the waste, the concrete vaults and the engineered cap prevent any harmful amounts of radiation escaping. (see Figure 8 for an illustration of the at surface vault concept).

8.110 A near surface disposal facility for ILW below the surface could be constructed as either silos or rectangular vaults. The silos or vaults would consist of multiple barriers including waste packages, grout, walls, backfill material and reinforced caps over the closed vaults. (see Figure 9 for an illustration of a near surface disposal facility below the surface).

8.111 The engineering of the facility and its depth would be determined by the needs of the environmental safety case for the specific waste destined for disposal.

Identifying a site for a near surface disposal facility for ILW in England and Wales

8.112 The siting process for a near surface disposal facility suitable for ILW in England and Wales is different to the siting process for a GDF. The siting process for a GDF recognises that identifying a suitable site for a GDF could take many years of geological investigations. The investigations necessary to identify suitable sites for near surface disposal are far less complex and time consuming. In addition, the NDA's search for a suitable site will be restricted to land that it already owns.

8.113 The UK Government and devolved administrations of Wales and Northern Ireland expect the NDA to develop at least one near surface disposal facility for ILW on land within its estate in England or Wales, subject to a robust business case, authorisation from the relevant regulators, and planning permission from the relevant planning authority. The design of the facility would be dependent upon the location of the site and the level of hazard posed by the radioactive waste intended for disposal.

8.114 The NDA will provide a community benefits package to the people that live in the local area of its chosen site or sites, as it currently does for the community near the LLWR, in recognition of the service that the community is providing for the rest of the UK. The NDA will determine the monetary value of the package and will work with the community to decide how it is to be administered and distributed in line with its socio-economic policies for supporting communities around NDA sites.

8.115 The NDA should also explore with relevant stakeholders, including regulators, local authorities and the local community whether the existing near surface facility in Cumbria, the LLWR, would be able to accept less hazardous ILW.

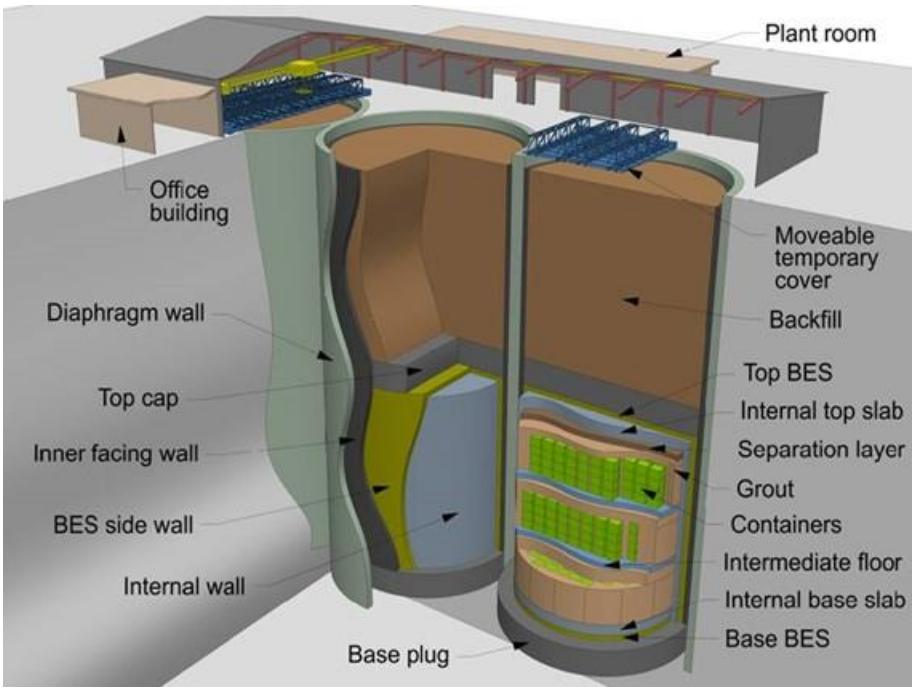


Figure 9. Artist's impression of the silo concept of near surface disposal

Retrievability in England and Wales

8.116 The UK and Welsh Governments and regulators agree that the purpose of a near surface disposal facility is to dispose of waste, not to store it. There are no plans to design a near surface disposal facility with retrievability in mind.

8.117 Permanently closing a near surface disposal facility at the earliest possible opportunity once operations have ceased provides for greater safety, greater security, and minimises the burden on future generations.

Near surface disposal and the planning regime in England and Wales

8.118 Near surface disposal facilities are subject to the usual local planning requirements under the Town and Country Planning Act 1990. In addition to its obligations under the Town and Country Planning Act, before selecting sites for near surface disposal, the NDA should engage with representatives from local communities in areas that may be suitable. The NDA will be transparent in its approach for evaluating potential sites in line with its existing transparency and openness policy.

Disposal facilities for low level waste

8.119 There is a large variation in types of LLW, some of which poses little risk to health or the environment. Some VLLW is suitable for disposal in landfill sites. Other VLLW and LLW is disposed of at permitted disposal sites. These are provided by commercial operators. However, there is also an on-site disposal facility at Sellafield, permitted to accept VLLW and some lower activity LLW from the Sellafield site.

8.120 The UK Government's and devolved administrations' preference is that commercial operators, alongside the NDA's own permitted landfill sites, continue to provide sufficient capacity for disposal of both low and high volumes of VLLW and low activity LLW that is likely to arise over coming decades. We will continue to work to ensure the regulatory framework supports the market approach.

8.121 LLW that requires the protection offered by an engineered near surface facility should be disposed of at facilities such as the LLWR in Cumbria and at the LLWF adjacent to Dounreay in Caithness. The LLWR is a national facility owned by the NDA. It accepts waste from both the nuclear and non-nuclear industries in the UK and LLW from the Ministry of Defence. The LLWF in Scotland accepts LLW for disposal from the decommissioning of the Dounreay site and the neighbouring Ministry of Defence Vulcan Naval Reactor Test Establishment.

On site disposal

8.122 During the final stages of decommissioning and clean-up of nuclear facilities, radiological hazards and risks to the environment and people's health are low. As buildings are demolished, very large amounts of rubble are generated. A small percentage of this material may be contaminated with radioactivity and would therefore be classified as LLW or high volume VLLW. In addition, there may be contaminated substructures, pipelines and soils on the sites.

8.123 Excavating this waste, packaging it and transporting it for disposal in approved facilities offsite can result in negative impacts, such as increasing the risks to workers' health and safety during excavation, increased HGV traffic and associated noise, dust, pollution and carbon dioxide emissions. In some cases, it may be safer and more sustainable to dispose of contaminated waste on site, rather than to excavate it and transport it for disposal elsewhere. There are three ways in which this can be done:

a) building engineered facilities on site (for waste that requires this level of protection);

b) minimising the generation of radioactive waste by managing radioactive contamination of soils in-situ, sub-surface structures or pipelines (known as in-situ disposal). This relies on natural attenuation and generally requires monitoring;

c) using lightly contaminated rubble to fill voids, to construct roads or tracks, to construct screens or for necessary landscaping on site (known as disposal for a purpose).

8.124 Existing environmental legislation EPR 16 (England and Wales) and EASR 18 (Scotland) allows site operators to apply for a permit for any of these waste management options. Since existing procedures for option a) are well established, the remainder of this discussion is focussed on options b) and c) above, which we refer to as “on-site disposal”

8.125 The environment agencies in England, Scotland and Wales have set out their requirements regarding nuclear decommissioning and clean-up which include options for on-site disposal.[62] Site operators should engage widely with local authorities, local communities and others in the development of their plans for decommissioning, clean-up and waste management. The relevant environment agency will only authorise the disposal of radioactive waste on a site when it is satisfied that disposal is part of a waste management plan that is optimised, so that it strikes the best overall balance between the safety of the public, workers and the environment, and other factors such as costs, potential future uses of the site, or the impacts of transport of waste and materials. It also requires that the final condition of the site, and the work to be done to reach that condition, are safe for people and the environment. If waste is used for disposal for a purpose, then the site operator should also demonstrate that the waste has a suitable physical and chemical specification and replaces material that would otherwise be needed for that purpose. If a permit is granted, it will remain in place until the relevant environment agency is content that the site can be released for unrestricted use.

8.126 In addition to an environmental permit, on-site disposal may require planning permission.

8.127 On-site disposal has the potential to further reduce risks associated with excavation as well as reducing environmental impacts such as HGV traffic, dust, noise, pollution and carbon dioxide emissions. The UK Government and devolved administrations support the on-site disposal of suitable LLW and VLLW on nuclear and former nuclear sites, where it is safe and where overall social, environmental and economic impacts are lower than those of other disposal options.

How radioactive waste disposal facilities are regulated

8.128 Radioactive waste disposal facilities are regulated by the relevant environment agency using the graded approach, which is proportionate to the nature and quantity of

[62] Management of radioactive waste from decommissioning of nuclear sites: Guidance on Requirements for Release from Radioactive Substances Regulation. Available at: https://www.sepa.org.uk/media/365893/2018-07-17-grr-publication-v1-0.pdf

radioactivity involved. This means that radioactive waste disposal facilities will need to be authorised. This usually means a permit is required unless the type of facility is specifically excluded from radioactive substances regulation. A permit will contain limitations and conditions on the radioactive waste that the facility can receive and manage in order to protect people's health and the environment.

8.129 Once a permit has been granted, the relevant environment agency will carry out inspections to ensure that operators are complying with the limits and conditions applied to them. If the operator is not complying, the environment agencies can take enforcement action to make the operator comply. If necessary, fines and in some cases, prison sentences, can be applied to the operator for non-compliance.

8.130 When an operator no longer wants to carry on the disposal activity that has been authorised, they can apply to surrender their authorisation. The relevant environment agency will assess the environmental impact of ceasing the activity and ensure that the operator will leave their premises in a satisfactory state before surrender is granted.

8.131 The environment agencies publish guidance for the developers or operators of near-surface facilities and a GDF,[63, 64] which is reviewed and updated periodically. The guidance documents explain the requirements a developer is expected to fulfil when they apply for an authorisation to develop a disposal facility in order to demonstrate that their facility will protect people and the environment. They need to show that their approach to developing a facility - including its design, construction, operation and closure - will meet a series of principles and requirements and they need to set this out in an environmental safety case. The environmental safety case must show that the facility will meet strict radiological protection criteria to protect people from harm during the operation of the facility and once it is closed. The radiological protection standards criteria are described in Appendix 4.

8.132 The complexity of the environmental safety case will depend on the hazard posed by the waste for which the disposal facility has been designed to receive. A simple environmental safety case may be adequate for a facility accepting waste with only very low concentrations of radioactivity, whereas a more complex environmental safety case may be needed for a facility accepting waste with higher concentrations of radioactivity or more toxic radionuclides. The environmental safety case will also specify detailed waste acceptance criteria for the disposal facility, that define and constrain the types, characteristics and quantities of waste that can be disposed of there.

[63] EA, SEPA & NIEA (2009) Near-Surface Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Available at: https://www.gov.uk/government/publications/near-surface-disposal-facilities-on-land-for-solid-radioactive-wastes

[64] EA & NIEA (2009) Geological Disposal Facilities on Land for Solid Radioactive Wastes: Guidance on Requirements for Authorisation. Available at: https://www.gov.uk/government/publications/geological-disposal-facilities-on-land-for-solid-radioactive-wastes

8.133 Certain disposal facilities will also be regulated by ONR and will require a nuclear site licence to operate as well as a permit from the relevant environment agency. Whether a disposal facility comes under the nuclear licensing regime depends on the type and quantity of the waste and the hazard it presents during operations. A GDF will be a licensed facility during its operation. The regulation of a GDF will be necessarily more complex than the regulation for other radioactive waste disposal facilities. We have provided more information on how a GDF will be regulated in Appendix 2.

8.134 Near surface facilities may also require a nuclear site licence from ONR to operate. Although radioactive waste that is suitable for disposal in near surface facilities requires less isolation and containment as it presents a low long-term risk to people and the environment, it may still present sufficient hazard during handling operations to warrant regulation under a licence. However, this will only become clear when the inventory for disposal is defined in its environmental safety case and waste acceptance criteria.

8.135 Disposal facilities for LLW and VLLW do not require a licence from ONR to operate because they are lower hazard, lower risk operations. However, they will normally need a permit from the relevant environment agency that will apply limits and conditions. The LLWF at Dounreay is not a licensed site but is operated under a permit granted by SEPA. The LLWR in Cumbria is a nuclear licensed site because of the legacy waste that was stored at the site and not because of its current disposal activities.

8.136 In considering where to site a disposal facility, developers should take account of geographical and geological features for a proposed site. They should take due account of the potential future effects of climate change, for example from rising sea levels. The developer must demonstrate that the facility is sited, designed, constructed, operated and eventually closed, in a manner that provides an appropriate level of long-term protection to people and the environment.

8.137 Developers and operators of disposal facilities will also require planning permission from the relevant planning authority. Developers should engage early with planning authorities to ensure that their proposals can satisfy relevant planning requirements and comply with local or regional planning strategies.

Use of NDA facilities by the nuclear and non-nuclear industry

8.138 The NDA should make its treatment, storage and disposal facilities available to other waste producers on commercially agreed terms. It is the UK Government's and devolved administrations' policy that disposal routes should be available for the long-term management of solid radioactive waste from both the nuclear, non-nuclear industries and defence activities. The NDA should make the LLWR and any other near surface disposal facilities it develops in England or Wales available to other waste producers on commercially agreed terms.

8.139 The UK Government and devolved administrations expect the NDA to ensure the optimal use of the LLWR. It should continue to assess whether a replacement for the LLWR might be required and plan accordingly. In considering the use of the LLWR and any replacement which the NDA might propose, either as a national, regional or local facility, the NDA should take into account the potential need for use of these facilities by other nuclear and non-nuclear industry waste producers. The NDA should also continue to assess whether there is likely to be sufficient landfill capacity available for the VLLW that will arise during its decommissioning and clean-up programme taking account of the wider volumes and characteristics of radioactive wastes that might be generated from other industries (e.g. offshore oil and gas decommissioning).

Implementation and delivery of this policy

8.140 The UK Government and devolved administrations acknowledge that thought will need to be given to implementation and delivery of this solid radioactive waste management policy. The UK Government and devolved administrations will work together with the NDA, regulators, radioactive waste management organisations and other waste producers and owners on the approach to implementation and delivery.

8.141 Implementation of the policy could be through an integrated solid radioactive waste management strategy. If adopted, the strategy would, among other things, replace the current three LLW strategies (nuclear industry,[65] non-nuclear industry,[66] naturally occurring radioactive materials).[67]

8.142 Development of such a strategy will require the steps set out below:

- first, we will need to determine the practicalities and feasibility of adopting an integrated solid radioactive waste management strategy. This will be done by the UK Government and devolved administrations in conjunction with the NDA;
- secondly, we will need a process to develop such a strategy and identify future arrangements for its delivery. This again will be undertaken by the UK Government and devolved administrations in conjunction with the NDA.

[65] UK Strategy (2016) for the Management of Solid Low-Level Waste from the Nuclear Industry. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/497114/NI_LLW_Strategy_Final.pdf

[66] UK Strategy (2012) for the management of solid low level radioactive waste from the non-nuclear industry in the United Kingdom: Part 1 Anthropogenic radionuclides. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/48291/4616-strategy-low-level-radioactive-waste.pdf

[67] UK Government and devolved administrations (2014) Strategy for the management of Naturally Occurring Radioactive Material (NORM) waste in the United Kingdom. Available at: https://www.gov.uk/government/consultations/strategy-for-the-management-of-naturally-occurring-radioactive-material-norm-waste-in-the-united-kingdom

Consideration will be given to the practicalities and feasibility of adopting an integrated solid radioactive waste management programme. If adopted, the programme would, among other things, replace the National LLW Programme[68] and the NDA's Integrated Waste Management Programme.

5. The solid radioactive waste policy set out above includes existing policy and policies that would be implemented if the proposals in Part 1 are taken forward. Do you agree that the policy statement captures all relevant policy on managing solid radioactive waste?

6. Do you have any suggestions for how this chapter on managing solid radioactive waste could be improved? Please provide the reasoning behind your response.

[68] UK Government (2011). National Low Level Waste (LLW) Programme and Strategy. Available at: https://www.gov.uk/government/publications/national-waste-programme/national-waste-programme

9

Nuclear decommissioning

9.1 This policy statement replaces the Statement of the UK Government and devolved administrations' policy on the decommissioning of the UK nuclear industry's facilities.[69]

9.2 Some aspects of the policy for the decommissioning of nuclear facilities in the UK are reserved. However, the policy on the management of the radioactive waste arising from nuclear decommissioning and clean-up activities is devolved. In addition, under the Energy Act 2004, Scottish Ministers are consulted on matters relating to the nuclear sites in Scotland which are the responsibility of the NDA and, in parallel with the UK Government, approve the NDA's strategies and business plans in relation to Scotland. Consequently, this is a joint policy statement of the UK Government and the devolved administrations of Scotland and Wales. Northern Ireland does not have any nuclear facilities and the policy does not extend to Northern Ireland.

9.3 Policy on nuclear decommissioning and managing radioactive substances including radioactive waste is based on the same basic principles that apply more generally to environmental policy:

- sustainable development;
- decisions being based on the best possible scientific information and analysis of risks;
- the precautionary principle;
- the polluter pays principle;
- application of the waste hierarchy.

9.4 The policy takes into account the increasing focus and emphasis in the UK on sustainable approaches and solutions to the decommissioning and clean-up of our nuclear facilities. A significant contribution to sustainability is to remediate, clean-up, decommission, and manage the waste as soon as practicable considering all the relevant factors such as the availability of resources (people, supply chain, funding, waste management infrastructure). The UK Government and devolved administrations of Scotland and Wales expect that environmental impacts of decommissioning and

[69] UK Government Statement (2004). Available at: https://www.gov.uk/government/publications/the-decommissioning-of-the-uk-nuclear-industrys-facilities

clean up should be minimised through reduction of greenhouse gas emissions and application of the waste hierarchy.

9.5 Innovative approaches to decommissioning and clean-up should also be pursued. This means drawing on learning from the nuclear sector, the wider non-nuclear sector, the underpinning research activities at national laboratories and universities, and the international arena. We also consider that the wider socio-economic benefits of decommissioning and clean-up should be maximised.

Scope of the policy

9.6 The policy covers all (existing and new) UK nuclear facilities and their sites. This includes power stations, other reactors, research facilities, fuel fabrication and reprocessing plants, treatment and storage facilities and laboratories on civil sites licensed under the Nuclear Installations Act 1965. The policy also covers the Small Modular Reactors and Advanced Modular Reactors programmes, and in England and Wales the new build nuclear programme. The policy includes, where relevant, facilities on Defence Nuclear Programme Sites. It should be noted that in Scotland, the 2017 Scottish Energy Strategy stated the Scottish Government's "opposition to new nuclear stations, under current technologies" – though the Scottish Government will assess new technologies based on safety, value for consumers, and contribution to Scotland's low carbon economy and energy future.[70]

9.7 This policy also covers the JET facility used for fusion research. The decommissioning of a fusion facility has not yet been undertaken in the UK. The UK Government has recently consulted on the regulation of fusion in England, including implications for fusion decommissioning and radioactive waste management. It has concluded that no major changes are required to existing policies and legislation that cover decommissioning of fusion facilities but intends to keep decommissioning of fusion facilities under review as the technology develops.[71] The decommissioning plans for JET currently being developed by the UK Atomic Energy Authority (UKAEA) in consultation with the NDA fall within the scope of this policy and are expected to inform future fusion decommissioning in the UK.

9.8 Any new facility covered by this policy should be designed, built and operated so as to minimise the complexity of subsequent decommissioning and associated waste management operations and costs across the full lifecycle of the facility. This approach will ensure the minimisation of radioactive waste generated over the lifecycle of the

[70] Scottish Government (2017). The future of energy in Scotland: Scottish energy Strategy. Available at: https://www.gov.scot/publications/scottish-energy-strategy-future-energy-scotland-9781788515276/

[71] Towards fusion energy: The UK Government's response to the consultation on its proposals for a regulatory framework for fusion energy. (June 2022). https://www.gov.uk/government/consultations/towards-fusion-energy-proposals-for-a-regulatory-framework

facility. In particular, it would avoid the creation of unplanned or unresolved decommissioning challenges and problematic wastes from decommissioning that require resolution by future generations.

Aim of the policy

9.9 The key aim of the policy is to provide a high-level framework within which operators, the NDA and Ministry of Defence can take decisions that would drive better, earlier, and more cost-effective solutions to decommissioning and clean-up of the UK's nuclear facilities. These decisions and solutions should ensure high standards of safety, security and environmental protection. Decisions should reflect the changing nature of the hazards that exist throughout the lifetime of a nuclear facility and be proportionate to the level of risk associated with these hazards to people and the environment. The decisions and solutions should also demonstrate value for money and minimise the burden on taxpayers and energy consumers. In particular, the UK Government and devolved administrations of Scotland and Wales expect the nuclear sector to continue to seek further opportunities to optimise, accelerate, and reduce the cost of the decommissioning and clean-up programmes for the nuclear legacy and the operating nuclear power stations.

9.10 The policy takes account of the requirements for the management of radioactive substances including radioactive waste, spent fuel and nuclear materials that are set out in chapters 7, 8 and 11 of this document. It also takes account of the commitment made by the UK Government in 2018 to amend the regulatory framework for the final stages of nuclear decommissioning and clean-up.[72]

9.11 The policy also provides the framework for facilitating our ambition for the UK to continue to be a world leader and influencer in the field of nuclear decommissioning and clean-up through promoting good practice and sharing expertise and experience.

Overview of nuclear decommissioning objectives and activities

9.12 Nuclear decommissioning in the UK is undertaken in accordance with international standards. In particular, IAEA Safety Standards for protecting people and the environment - *Decommissioning of Facilities: General Safety Requirements Part 6* (No. GSR Part 6).[73] Additionally, the UK is a Contracting Party to the Convention on Nuclear

[72] Amending the Regulatory Framework for the Final Stages of Nuclear Decommissioning and Clean-Up" Government response, October 2018, https://www.gov.uk/government/consultations/the-regulation-of-nuclear-sites-in-the-final-stages-of-decommissioning-and-clean-up

[73] IAEA (2014). IAEA Safety Standards: Decommissioning of Facilities. Available at: https://www.iaea.org/publications/10676/decommissioning-of-facilities

Safety[74] and the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management.[75] Consequently, the UK Government and devolved administrations' decommissioning policy complies with the conventions. The UK Government and devolved administrations will continue to comply with these specific requirements and meet internationally agreed standards.

Definition of nuclear facilities

9.13 The decommissioning of a nuclear facility refers to all the technical and administrative actions that are required to allow the release of an installation from regulatory control. For the purposes of this policy statement, '**facilities**' means buildings and their associated land and equipment in which radioactive material is produced, processed, used, handled or stored where the hazard and risk posed by the facility requires the consideration of protection and safety of workers, people and the environment. '**Land**' includes the surface, subsurface soil horizons, and any surface or subsurface water or aquifers potentially affected by radioactive material and non-radioactive material such as asbestos.

For the purposes of the Energy Act 2004,[76] the meaning of **'cleaning-up' and 'decommissioning'** in relation to a nuclear site or installation includes activities such as:

"The treatment, storage, transportation, and disposal of hazardous material and/or substances that need to be dealt with or removed in or towards making the site or installation suitable to be used for other purposes; and

The construction of buildings and other structures to be used in connection with the cleaning-up or decommissioning of the site or installation."

9.14 Nuclear decommissioning in England, Scotland and Wales is carried out using a risk-informed approach to progressively and systematically reduce the radiological and non-radiological hazards a facility poses, giving due regard to security considerations, the safety of workers and the general public, and protecting the environment. The work to reduce the higher hazards and risks is prioritised. In the longer term, the outcome of decommissioning is to reduce the number of sites and acreage of land which remain under regulatory control.

[74] IAEA. Convention on Nuclear Safety. Available at: https://www.iaea.org/topics/nuclear-safety-conventions/convention-nuclear-safety

[75] IAEA. Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Available at:https://www.iaea.org/topics/nuclear-safety-conventions/joint-convention-safety-spent-fuel-management-and-safety-radioactive-waste

[76] See section 37(1) of the Energy Act 2004, Available at: https://www.legislation.gov.uk/ukpga/2004/20/section/37

Approaches to nuclear decommissioning

9.15 While the general approach to decommissioning in England, Scotland and Wales is for it to be undertaken as soon as reasonably practicable, different strategies to achieve this objective are available. The IAEA General Safety Requirements Part 6[73] recognises two possible decommissioning strategies – immediate dismantling where there is no delay after cessation of operations or deferred dismantling with varying periods of deferral that are in principle applicable for all facilities. The NDA has a rolling programme of site-specific strategies for the Magnox reactor fleet, which would involve a range of deferral periods depending on the facility.

Immediate dismantling whereby decommissioning activities take place immediately after permanent shutdown. Under this strategy, the equipment, structures, systems and components of a facility containing radioactive material are removed and/or decontaminated to a level that allows the facility to be released from regulatory control for unrestricted use or released with restrictions on its future use.

Deferred dismantling (also called safe storage, safe store or safe enclosure) generally involves a period of 'care and maintenance' or 'quiescence' following a preparatory phase. The strategy is intended to realise specific benefits such as radioactive decay which can reduce worker dose and radioactivity, and the volume of radioactive waste produced when decommissioning resumes. Under this strategy, after removal of the nuclear fuel from the facility (for nuclear installations), all or parts of a facility containing radioactive material is either processed or placed in such a condition that it can be kept in a safe and stable condition for varying time periods. The facility is maintained in this state until decommissioning resumes and it is subsequently decontaminated and/or dismantled. Deferred dismantling may involve early dismantling of some parts of the facility and early processing of some of the radioactive material and its removal from the facility, as part of the preparatory steps for the subsequent safe storage of the remaining parts of the facility.

The disadvantages of a deferred dismantling strategy include the 'hotel costs' of maintaining the facility during the care and maintenance period, loss of knowledge and expertise.

9.16 Entombment, whereby all or part of the facility is encased in a structurally long-lived material, is not recognised in the UK as a planned decommissioning strategy. In line with IAEA guidance,[77] the UK recognises that entombment is appropriate only under

[77] IAEA, Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities. Available at: https://www.iaea.org/publications/12210/decommissioning-of-nuclear-power-plants-research-reactors-and-other-nuclear-fuel-cycle-facilities

exceptional circumstances, for example, following a severe accident. It is not the same as on-site disposal, including in-situ disposal or disposal for a purpose.

Decommissioning activities

9.17 Decommissioning is a staged process through which a nuclear facility, at which normal operations have finally ceased, is taken out of service, including full or partial dismantling of buildings and their contents. It may include other activities such as the decontamination of buildings which are not to be dismantled and the remedial treatment of the land under and around the facility.

9.18 Decommissioning should be carried out as soon as reasonably practicable, taking into account all relevant factors as provided for in the operator's strategy and plan (see paragraph 9.24). The UK Government and devolved administrations of Scotland and Wales recognise that different strategies to achieve this objective are available to operators and that decommissioning may involve two or more separate stages spanning a number of decades. A case might be made by the operator that deferral represents the highest value option after taking many factors into account. These include:

- to take advantage of new or developing technologies;
- further development of existing good practice;
- taking benefit from radioactive decay;
- adopting a lead and learn approach;
- realising an opportunity to re-use a facility.

9.19 Other constraints that may slow or defer decommissioning include:

- access restrictions;
- availability of waste management infrastructure;
- limited resource including supply chain capacity.

9.20 Operators would need to justify the decommissioning programme or strategy they have selected with the regulators. They should periodically review their programme or strategy.

9.21 A lifecycle approach should be taken to the decommissioning and clean-up of nuclear facilities. We consider this to be key to good decision-making, optioneering, and prioritisation.

9.22 A different culture, mindset, and set of skills are required for decommissioning and clean-up activities compared to that required for an operating facility. This change in culture should be considered during the early stages of decommissioning and planning as a facility transitions from operation to decommissioning.

9.23 The long timescales of decommissioning and clean-up activities and the fact that disposal routes for all types of waste are not yet available inevitably leads to some uncertainty. This will need to be managed effectively by operators and nuclear liability owners.

Decommissioning strategies and plans

9.24 Each operator must produce and maintain a decommissioning strategy and plan for their sites. The UK Government and devolved administrations of Scotland and Wales expect that those strategies and plans will take into account the views of stakeholders, including relevant local authorities, public and stakeholder groups. The decommissioning strategies and plans will also need to take into account the developments in policies on the management of radioactive substances which are set out in chapters 6, 7, 8 and 11 of this document.

Decommissioning strategies

9.25 A decommissioning strategy may apply to more than one facility on a site or to a number of similar facilities on different sites. However, each individual facility should be separately assessed and costed. The UK Government and devolved administrations of Scotland and Wales also expect that operators will typically begin to refine strategies and plans, in consultation with regulators and stakeholders before they plan to close the facilities (or first facility as appropriate). A strategy should take into account a number of factors such as those in the NDA Value Framework.[78] Any strategy should assess and present factors affecting decommissioning in a transparent way underpinned by objective information and arguments. Factors include:

- maintaining the standards of worker, public, and environmental safety;
- maintaining site security;
- maintaining adequate site stewardship;
- providing adequate funding for decommissioning and clean-up work;
- using resources effectively, efficiently, and economically including in relation to asset management;
- maintaining accurate records, taking account of the long timescales for nuclear decommissioning and clean-up programmes. These records should be retained and archived (see paragraphs 9.42 to 9.50);

[78] NDA (2016). The NDA Value Framework (version 1.2) January 2016. Available at: https://www.gov.uk/government/publications/nda-value-framework-how-we-make-decisions

- taking a lifecycle approach to decommissioning which is key to good decision-making, optioneering and prioritisation;
- maintaining sufficient subject matter experts, knowledge base and skills necessary for decommissioning activities and the management of associated waste, taking into account the long timescales for decommissioning and clean-up programmes. This should include the retention, recruitment and training of staff and the preservation of the documentation necessary to fully underpin the activities. Actions to acquire new skills or develop existing ones should be carried out as necessary. Operators and public and private nuclear liability owners may also wish to bring forward decommissioning activities in order to utilise existing skills or knowledge;
- using existing good practice wherever possible including applying learning from other sectors and international experience to augment skills and ensure that decommissioning activities are carried out effectively. The UK Government and devolved administrations of Scotland and Wales consider it important that all operators and public and private nuclear liability owners identify, implement and share best practice, if necessary, under appropriate financial arrangements;
- conducting research and development to develop the necessary skills or good practice including taking into account advances in, for example, remote decommissioning techniques. The strategy should also take account of decommissioning synergies with other sectors' research and development objectives;
- using, BAT/BPM and the application of the waste hierarchy to achieve the best overall outcomes for people and the environment by optimising the management of radioactive waste. This should minimise the environmental impacts including through re-use or recycling materials wherever possible and provide for effective and safe management of waste which is generated. Decommissioning and clean-up strategies should seek to avoid the creation of radioactive waste in forms which may foreclose options for its safe and effective long-term management;
- taking benefit from radioactive decay as a possible management option, alongside others, where there are clear benefits to be had from slowing or deferring decommissioning;
- taking account of a risk-informed approach for the management of solid radioactive waste when considering the waste arisings from decommissioning and clean-up activities. This will ensure that the most appropriate and proportionate management route is identified based on the properties of the waste (radiological, chemical, physical) and the risk it poses to people and the environment;

- taking account of the policy requirements for liquid and gaseous radioactive discharges, the requirements of the UK Radioactive Discharges Strategy[79] and the UK's obligations under the OSPAR Convention.[80] Short term increases of some radionuclides may be unavoidable during decommissioning and clean-up activities. However, where this is the case, the relevant environment agency will need to be satisfied that, among other things, they represent the optimal result from appropriate option studies and reflect the application of BAT/BPM/ALARA principles;
- ensuring the site end state is optimised particularly during the latter stages of decommissioning and clean-up;
- consulting appropriate public and stakeholder groups on the options considered and the contents of the strategy;
- deferring physical decommissioning works until a proven or viable waste management route is available. This may include an interim solution provided it is necessary and proven or viable, and the process to install it is underway. Where waste is created, priorities for managing the various types of waste which do arise should be established. Waste should be managed in accordance with the requirements of the radioactive waste management plan (see chapter 8).

9.26 The factors set out above should be applied throughout each decommissioning programme to ensure that programmes are optimised, and to help to establish the earliest practicable timetable for the decommissioning stages.

Decommissioning plans

9.27 Operators' decommissioning strategies must include a comprehensive site decommissioning plan for safely carrying out decommissioning activities with due regard to security and the protection of the environment. The decommissioning plans must be financially underpinned.

9.28 Each decommissioning plan should take into account any proposed future use of the site in question. Operators of sites which are the responsibility of the NDA are expected to produce and maintain plans for their sites. Each plan for sites within the NDA estate will need to be consistent with the overall strategy of the NDA and be subject to its approval.

[79] UK Government (2018) UK Strategy for radioactive discharges. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/249884/uk_strategy_for_radioactive_discharges.pdf

[80] Convention for the Protection of the Marine Environment of the North-East Atlantic. Available at: https://www.ospar.org/convention

9.29 Sites of decommissioning nuclear facilities may represent a potentially valuable resource. The future use of the site, once decommissioning activities have been safely completed, could therefore be a significant factor in determining the decommissioning and clean-up activities. It may be possible in some cases to complete decommissioning activities to the point where unrestricted use is possible, although an overriding consideration will be whether it represents the best optimised end-state, and the site has been delicensed. Experience to date indicates that uses will range from industrial and commercial use to unrestricted use.

9.30 The objective should be to get the best solution overall taking into account the needs of the environment, the safety of workers and the local community, and socio-economic factors. The range of facilities and circumstances to which the policy applies will mean that the specific use (or uses) of each site cannot sensibly be determined many years in advance of decommissioning and clean-up activities. To do otherwise risks foreclosing options currently not envisaged or imposing uses which turn out to be unsuitable or unnecessary.

9.31 The UK Government and devolved administrations of Scotland and Wales expect operators to consider the potential next use of the site including the beneficial reuse of sites sooner rather than later, taking into account local factors and the wishes of the local community. Operators will therefore need to discuss potential uses with the relevant planning authority, the regulators, and public and Site Stakeholder Groups. The condition to which a site is restored will need to comply with the requirements set out in the environment agencies' guidance *Management of radioactive waste from decommissioning of nuclear sites: Guidance on the requirements for release from radioactive substances regulation.*[81] This includes the conditions attached to the permit to meet the reference end-state.

9.32 The UK Government and devolved administrations of Scotland and Wales consider that the land on which publicly owned nuclear facilities are located may be a key strategic asset and should be considered first for the location of national infrastructure. For sites that are the responsibility of the NDA, our expectation is that the NDA's strategy and annual business plans should take into account wider policy of the UK Government and the devolved administrations of Scotland and Wales, and the best strategic future use of NDA sites. This includes optimising the wider socio-economic benefits of decommissioning and clean-up.

[81] SEPA, EA and NRW joint publication. Management of radioactive waste from decommissioning of nuclear sites: Guidance on Requirements for Release from Radioactive Substances Regulation. Available at: https://www.sepa.org.uk/media/365893/2018-07-17-grr-publication-v1-0.pdf

Review of decommissioning programmes

9.33 Operators should review their decommissioning programmes at least every five years or when changes in circumstances, including relevant Government policies, make this necessary. Operators whose sites are an NDA responsibility will need to work closely with the NDA to ensure that their site plans are modified when the need arises.

Funding of decommissioning and clean-up activities

9.34 The UK Government and devolved administrations of Scotland and Wales expect that all operators will take the steps necessary to ensure that their decommissioning and clean-up activities are adequately funded. No stage of a decommissioning project should be started unless it is clear that sufficient funds will be available to complete the decommissioning of the stage in question in a safe and secure way which represents BAT/BPM for the site.

9.35 The NDA, which is responsible for the decommissioning and clean-up of the UK's 17 earliest nuclear sites, is funded directly by the UK Government. The financial arrangements for the NDA include a dedicated statutory segregated account. This ensures that sufficient funds are available to enable the NDA to drive forward delivery of its mission.

9.36 Funding for the decommissioning and clean-up of the UK's seven advanced gas-cooled reactors (AGRs) and one pressurised water reactor (PWR) is assured through the Nuclear Liabilities Fund (NLF)[82] which is underwritten by the UK Government. The NLF is a segregated fund which has been set up to meet the decommissioning and clean-up costs of the UK's current fleet of operating nuclear power stations.

9.37 Operators of all new nuclear power stations are required, under the Energy Act 2008,[83] to have a Funded Decommissioning Programme (FDP) approved by the Secretary of State before nuclear-related construction can begin and to comply with that programme thereafter. The purpose of the FDP is to ensure that new nuclear power station operators have secure funding arrangements in place to meet the full costs of decommissioning, waste management and the disposal of spent nuclear fuel. The FDP is also used to satisfy licensing regime requirements regarding decommissioning liability.

[82] Nuclear Liabilities Fund. Available at: https://www.nlf.uk.net/
[83] UK Government. Energy Act 2008. Available at: https://www.legislation.gov.uk/ukpga/2008/32/contents

How nuclear decommissioning is regulated

9.38 The UK Government, the devolved administrations of Scotland and Wales and the regulators are committed to ensuring that the application of the regulatory controls before and during decommissioning is transparent. For nuclear licensed sites, the key parts of the regulatory regime are the controls imposed by the ONR under national regulations,[84] including safeguards, and the nuclear site licence. They also include the relevant regulations and conditions imposed by the environment agencies in permits. In England and Wales, the environmental regulations only apply to authorisation of radioactive discharges and waste disposal from the site. In Scotland, the environmental regulations apply to all management of radioactive waste including receipt, treatment, storage, transfer, and disposal. The ONR also regulates nuclear licensed sites in relation to civil nuclear security. The JET facility is regulated by the Environment Agency and the Health and Safety Executive.

9.39 The UK Government and devolved administrations of Scotland and Wales expect the regulators to ensure that the level of regulation is proportionate to the level of the risk to safety, the environment or security posed by the site while ensuring that the public and the environment are protected in accordance with the dose and risk criteria set out in Chapter 5. We expect that the amount of regulation will reduce as decommissioning proceeds although it is recognised that there may be periods of intense decommissioning activity when regulatory oversight will need to be temporarily increased. However, in order to facilitate this more proportionate approach legislative changes are needed. These proposed changes are set out in the box below paragraph 9.40.

9.40 In October 2018, following consultation, the UK Government set out its intention to introduce legislation to amend the regulatory framework that applies to nuclear sites in the final stages of decommissioning and clean-up. They are being taken forward in the Energy Bill 2022, which is currently before Parliament.

Proposals to amend the regulatory framework that applies to the final stages of nuclear decommissioning and clean-up

Current situation:

Nuclear third party liability: nuclear licensed facilities are required by law to have nuclear third party liability cover. Under current legislation, they can exit the nuclear third party liability regime when the “no danger” criterion in the Nuclear Installations Act 1965 (NIA65) is met.

[84] UK Government (2018). The Nuclear Reactors (Environmental Impact Assessment for Decommissioning) (Amendment) Regulations 2018. Available at: https://www.legislation.gov.uk/uksi/2018/834/contents/made

Nuclear licence: nuclear site licence holders can surrender the licence at any time, although it would be an offence to use a site for an activity which requires a licence without holding a licence. In the event that a licensee surrenders its licence, ONR would continue to regulate the licensee using directions until the "no danger" point is met.

Environmental permitting: nuclear sites are subject to environmental permitting throughout their lifecycle but the environmental and nuclear regulations have different approaches to final site clean-up.

Proposed amendments

Nuclear third party liability: nuclear licensed facilities in the process of being decommissioned will be able to exit the nuclear third party liability regime when internationally recognised criteria,[85] developed specifically for this purpose, are met.

Nuclear licence: nuclear site licensees will lose their right to surrender the licence automatically and will need to apply to ONR, demonstrating that they meet the new criteria set out in legislation. After the nuclear licence is ended, further clean-up and demolition work will continue, with the HSE rather than ONR, assuming responsibility for regulation of health and safety of work activities, as it does on similar non-nuclear sites undergoing clean-up of radioactive contamination.

Environmental permitting: after the end of the nuclear licence, former nuclear sites will continue to be subject to environmental permitting until they can be released for unrestricted use. This may be years or decades after the end of the nuclear licence. Sites may be available for restricted use while under an environmental permit. Some amendments to environmental permitting regulations will be required to allow for clean-up of radioactive contamination on or from former nuclear sites that pre-date the environmental permit.[86]

9.41 These amendments will ensure that low risk sites which no longer require the protection afforded by the nuclear licensing regime will be regulated in a more proportionate way. They will also ensure a more sustainable approach to site clean-up.

[85] OECD Nuclear Energy Agency Steering Committee "Decision And Recommendation Of The Steering Committee Concerning The Application Of The Paris Convention To Nuclear Installations In The Process Of Being Decommissioned", October 2014. Available at: https://www.oecd-nea.org/jcms/pl_20232/decision-and-recommendation-of-the-steering-committee-concerning-the-application-of-the-paris-convention-to-nuclear-installations-in-the-process-of-being-decommissioned-2014?details=true

[86] To ensure that standards are maintained as a consequence of the proposed legislative change, the UK Government and the Welsh Government have proposed some changes to the Environmental Permitting Regulations (England and Wales) 2016. The Scottish Government has examined the Environmental Authorisations (Scotland) Regulations 2018 and does not consider that amendment is necessary at this stage. All three Governments propose to disapply the Radioactive Contaminated Land Regime for former nuclear sites, while they remain under environmental permit.

Records management

9.42 The UK Government and devolved administrations of Scotland and Wales expect relevant nuclear records to be maintained, retained and archived.[87] Nuclear records in this context refers to reports, including instrument charts, certificates, logbooks, computer data and printouts kept at a nuclear facility, in particular:

- records relating to compensation claims by workers (including possible future claims by workers);
- records relating to spent fuel and nuclear materials;
- records that support continued decommissioning and waste management;
- records of generic importance, e.g. degradation of stainless steel and or concrete;
- records about the location and quantities of any radioactive waste disposal permitted on the site.

9.43 A regular process of review is required, in order to determine which records should be retained and which can be disposed of. This review process should be informed by ONR guidance on the need and use of a record.[88]

9.44 These records should be organised in such a way that they provide a complete and objective past and present representation of facility operations and activities, including all phases from design through to closure and decommissioning (if the facility has been decommissioned).

9.45 We consider maintaining accurate records during operation and decommissioning of nuclear facilities to be vital to ensuring that safe working practices are followed and that both human health and the environment are protected. We expect site operators to keep accurate records in order to make decisions about current and future work that needs to be undertaken. Records must therefore be accurate, legible, readily retrievable, and accessible to all those who need the information in order to operate and decommission nuclear sites.

Archiving records

9.46 It is the policy of the UK Government and devolved administrations of Scotland and Wales that sites will be able to exit the nuclear licensing regime, including the third-party

[87] See ONR's licence conditions: https://www.onr.org.uk/licensing.htm.
[88] ONR has developed Technical Inspection Guides (TIGs) and a Technical Assessment Guide (TAG) which set out ONR's expectations on records for nuclear licence holders: TIG for LC 6 www.onr.org.uk/operational/tech_insp_guides/ns-insp-gd-006.pdf TIG for LC25 www.onr.org.uk/operational/tech_insp_guides/ns-insp-gd-025.pdf TAG on duty holder management of records www.onr.org.uk/operational/tech_asst_guides/ns-tast-gd-033.pdf

liability regime, when international standards are met. However, claims for liability can be made up to 30 years after a site has exited the regime. Therefore, once a site has been decommissioned, nuclear records must be retained in order to assess claims under the third-party nuclear liability regime and to inform decisions about possible future use of the land.

9.47 We expect ONR to archive records relating to its decisions regarding the end of the liability regime and delicensing as part of the selection and preservation required by section 3(1) of the Public Records Act 1958 (PRA58).[89]

9.48 Former nuclear sites will continue to be regulated by the relevant environment agency until they meet the conditions for surrender of the environmental permit. These conditions are described in the 2018 environment agencies' joint publication *'Guidance for the Release of Nuclear Sites from Radioactive Substances Regulation*'.[90] We expect the environment agencies to use their existing powers under the Public Records Act 1958, the Government of Wales Act 2006 and the Public Records (Scotland) Act 2011 to require archiving of the site-wide environmental safety case and waste management plan at the point of delicensing. We also expect the environment agencies to use their powers under that legislation to require that the final site-wide environmental safety case is archived just prior to the surrender of the environmental permit, since it will contain information that may be required by local authorities and future users of the site.

Nuclear Archives

9.49 During the operation and decommissioning of nuclear facilities, nuclear records are held on site in accordance with statutory and/or regulatory requirements and regulatory guidance. Currently, historic records are held at various sites across the UK including the sites of the NDA and its subsidiaries but also by a variety of commercial organisations, some dating back to the beginning of the UK nuclear industry. The nuclear sector is exceptional in the long timeframes involved in the lifecycle of nuclear facilities. These long timeframes also extend to nuclear records which can require archiving for hundreds of years. The UK Government and devolved administrations of Scotland and Wales therefore consider it important that records are securely stored in suitable facilities.

9.50 Nucleus, the Nuclear & Caithness Archives, has recently been established as the single long-term repository for the civil nuclear industry's records. It is an extension of the National Archives at Kew and is run by NDA Archives Ltd (a wholly owned subsidiary of the NDA). The UK Government and devolved administrations of Scotland and Wales

[89]The Public Records Act 1958. Available at: https://www.nationalarchives.gov.uk/documents/public-records-act-1958-web-27-4-10.pdf

[90] UUK Government (2018). Management of radioactive waste from decommissioning of nuclear sites: Guidance on Requirements for Release from Radioactive Substances Regulation. Available at: https://www.sepa.org.uk/media/365893/2018-07-17-grr-publication-v1-0.pdf

expect that the NDA makes its archives available to ONR to store its records relating to decisions on exiting the nuclear liability regime and delicensing, and to all former nuclear site operators to store other relevant records. The NDA may negotiate suitable commercial terms with operators for the provision of this service.

7. The nuclear decommissioning policy set out above includes existing policy and policies that would be implemented if the proposals in Part I are taken forward. Do you agree that the policy statement captures all relevant policy on nuclear decommissioning?

8. Do you have any suggestions for how this chapter on nuclear decommissioning could be improved? Please provide the reasoning behind your response.

10

Import and export of radioactive substances

10.1 This chapter outlines the UK Government's policy for the import and export of radioactive substances. It provides a high-level framework for the import and export of radioactive materials and radioactive waste. It sets out how the UK Government expects the regulators to apply tests to inform their decisions on applications they receive to import or export radioactive waste. Policy on the import and export of radioactive materials and waste is reserved, however, its implementation is devolved.

Scope of the policy

10.2 The policy covers all types of radioactive substances i.e. materials and waste. Policies on non-proliferation and security of nuclear material and on the transport of radioactive substances are outside the scope of this document.

Aim of the policy

10.3 This policy aims to ensure that the UK has access to radioactive materials that are not produced or manufactured in the UK, but which are necessary for UK industry, research and healthcare. The policy also aims to enable UK waste producers to access the most efficient and appropriate methods of radioactive waste management (e.g., where quantities are too small for national solutions to be cost effective or sustainable). It aims to support growth opportunities for UK industry, helping sustain and improve UK capability in radioactive waste management (including skills and technology) and enable inward investment opportunities where appropriate.

10.4 The UK Government recognises that radioactive materials and the resulting radioactive waste, can pose long lasting hazards. That is why the policy requires that decisions on the import and export of radioactive materials and waste should always be taken with the aim of minimising risk to people's health and the environment. Any processes carried out in the UK on imported radioactive waste must also be subject to appropriate regulation.

10.5 The principal independent regulators for the import and export of radioactive substances are the environment agencies for England, Scotland, Wales, and Northern Ireland. These regulators each make their own decisions on proposals they may receive to import or export radioactive substances. When proposals for shipments involve more

than one nation of the UK, the respective regulators cooperate to realise the aims of the policy. The UK Government and the devolved administrations work closely together to ensure the policy is implemented consistently across the four nations.

How the import and export of radioactive substances is regulated

10.6 The import and export of radioactive materials and radioactive waste is subject to various international conventions and UK legislation:

- **The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management:**[91] this international convention addresses the issue of spent fuel and radioactive waste management safety on a global scale. Article 27 covers the transboundary movements of radioactive wastes and spent fuel.
- The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal:[92] this international convention governs the movement of hazardous waste.
- The Waste Shipment Regulation (EC) No 1013/2006[93] as amended by the International Waste Shipments (Amendment) (EU Exit) Regulations 2019:[94] these regulations cover the transboundary movements of Naturally Occurring Radioactive Material (NORM) waste.
- **The Transfrontier Shipment of Radioactive Waste and Spent Fuel (EU Exit) Regulations 2019:**[95] provide for the transfer of radioactive waste across national boundaries. The regulations require prior notification and approval by the regulators before any radioactive waste can be exported from, or imported to, the UK. They also apply to the import to the UK for disposal of disused sealed sources manufactured in the UK.

[91] The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management. Available at: https://www.iaea.org/sites/default/files/infcirc546.pdf
[92] The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. Available at: http://www.basel.int/TheConvention/Overview/TextoftheConvention/tabid/1275/Default.aspx
[93] Regulation 1013/2006 on the shipments of waste. Available at: https://www.legislation.gov.uk/eur/2006/1013/contents
[94] The International Waste Shipments(Amendment)(EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111178539/contents
[95] The Transfrontier Shipment of Radioactive Waste and Spent Fuel (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/uksi/2019/156/contents/made

- **Under the Northern Ireland Protocol,** Northern Ireland will continue to apply Council Directive 2006/117[96] to any intra-community shipments between Northern Ireland and EU Member States.
- **The Shipments of Radioactive Substances (EU Exit) Regulations 2019:**[97] these regulations cover the movement of sealed radioactive sources from the EU to the UK.
- **The UK Plan for Shipments of Waste**[98] applies to the transboundary movements of NORM waste.
- **The Export of Radioactive Sources (Control) Order 2006**[99] controls the export of certain high-activity radioactive sources as defined under the International Atomic Energy Agency (IAEA) Code of Conduct on the Safety and Security of Radioactive Sources.

Policy on import and export of radioactive materials

10.7 Radioactive materials have considerable economic and social value in energy, medical, scientific, and industrial applications. It is important that the UK has adequate access to radioactive materials, such as radioactive sources that are not manufactured in the UK, but which are necessary for UK industry, research and healthcare. For example, the UK routinely and safely imports medical radioisotopes for use in hospitals. It is equally important that the UK can export radioactive materials to countries that need them, and which may not be in a position to manufacture them.

10.8 The policy of the UK Government is that radioactive materials may be imported and exported provided shipments comply with any relevant safety and environmental regulations. This enables the UK to import radioactive materials for beneficial uses and to supply them to other countries that need them.

Policy on import and export of spent nuclear fuel

10.9 Any proposals to import or export spent fuel to or from the UK are subject to approval by the regulators and the UK Government would expect to be consulted. Any spent fuel which is imported or exported for the purpose of reprocessing would need to be in line with our policy for the management of separated plutonium and uranium. Policy on

[96] Council Directive 2006/117/Euratom on the supervision and control of shipments of radioactive waste and spent fuel. Available at: https://www.legislation.gov.uk/eudr/2006/117/contents/adopted
[97] The Shipments of Radioactive Substances (EU Exit) Regulations 2019. Available at: https://www.legislation.gov.uk/ukdsi/2019/9780111178898/contents
[98] UK plan for shipments of waste. Available at:
[99] The Export of Radioactive Sources (Control) Order 2006. Available at: https://www.legislation.gov.uk/uksi/2006/1846/contents/made

virtual reprocessing and waste substitution are covered in chapter 11, paragraphs 11.15 -11.18.

Key principles underpinning policy on import and export of radioactive waste

10.10 The UK Government's policy for the import and export of radioactive waste covers all solid radioactive waste, including NORM waste. It is based on the following key principles.

- **radioactive waste should, so far as is practicable, be managed in the country in which it is generated**. This principle ensures that policy on trade in radioactive waste is broadly similar to that for other waste i.e. that there should be a presumption of self-sufficiency. However, we recognise that the UK may have waste treatment facilities that other countries do not possess. Equally, other countries may have treatment facilities that the UK wishes to use;
- the protection of human health and the environment requires that, so far as is possible, radioactivity should not be introduced unnecessarily to the environment and any risks from radioactivity are kept as low as reasonably achievable. This assessment is for the global environment rather than the risk to individual countries. When assessing applications for import or export of radioactive waste, an assessment should be made as to whether risks can be kept as low as reasonably achievable if the waste is moved to a country with better facilities to treat the waste;
- **radioactive waste should be managed as close to the point of generation as possible.** However, the UK Government recognises that there may be circumstances where a country may not have the necessary facilities to manage its own radioactive waste. In those circumstances the transboundary movement of waste may be necessary to ensure the risk to human health and the environment is kept as low as reasonably achievable.

10.11 These principles are interlinked and should be considered together when assessing applications for the import or export of radioactive waste.

Policy on import and export of radioactive waste

10.12 Radioactive waste is produced by many sectors which are important to the UK economy. It is important for UK industry to have access to facilities in other countries to treat radioactive waste, and for facilities in the UK to be able to offer treatment services for radioactive waste from abroad. UK Government implementation of international conventions is intended to enable the import and export of radioactive waste where it is

in accordance with the principles set out above, and in compliance with environmental legislation.

10.13 UK Government policy is that the UK should not become the destination for the disposal of other countries' radioactive waste. However, the UK may have waste treatment facilities that other countries do not possess. Equally, other countries may have treatment facilities that the UK wishes to use. For example, in the past we have exported metallic radioactive waste going to metal smelting facilities in Sweden which are not available in the UK.

10.14 UK Government policy is that radioactive waste should not, in general, be imported to or exported from the UK. In line with international obligations, every country should have ultimate responsibility for the radioactive waste it generates. This principle forms the basis for all hazardous waste management in the UK and reflects international best practice. The import and export of radioactive waste may only be allowed in certain well-defined circumstances, and in light of an assessment of all practicable options.

10.15 Radioactive waste should only be exported to countries where we are satisfied that it will be managed safely and securely and in accordance with international environmental standards and legislation.

10.16 Import and export of LLW may be permitted for:

- the recovery of reusable materials;
- for treatment that will make its subsequent storage and disposal more manageable;
- to send samples for investigative analysis.

10.17 Import and export of HLW and ILW may be permitted for:

- the recovery of re-usable materials, where this is the genuine prime purpose;
- to send samples for investigative analysis;
- for treatment to make its subsequent storage and disposal more manageable where the processes are at a developmental stage or where the quantities are too small to be practicable in the country of origin.

10.18 Where the quantities of waste arising from the processes set out in paragraphs 10.16 and 10.17 would add materially to the waste needing to be disposed of in the UK or the country of destination, the presumption should be that it will be returned to the country of origin to a timescale agreed by the country of origin and destination.

10.19 LLW, ILW and HLW may be imported to the UK if it is:

- in the form of disused sources which were manufactured in the UK;

- waste from small users, such as hospitals, situated in countries which produce such small quantities of waste that the provision of their own specialised facilities would be impractical;
- waste from developing countries which cannot be reasonably expected to acquire suitable disposal facilities.

10.20 All decisions about the import or export of radioactive wastes should be subject to tests by the regulators, which aim to ensure that:

- any proposals to import radioactive waste to or export radioactive waste from the UK are consistent with UK policy;
- consideration has first been given to managing the radioactive waste in the country of origin;
- consideration has been given to managing the radioactive waste in countries that are closer to the country of origin;
- radioactive waste is only exported to countries where it will be managed safely and securely in accordance with international environmental standards and legislation;
- where HLW or ILW is imported or exported for the recovery of reusable materials, this must be the genuine prime purpose. This test is aimed at preventing the import or export of radioactive waste for ‘sham’ recovery;
- the quantities of HLW or ILW must be too small for treatment processes to be practicable in the country of origin;
- the quantities of waste arising from the recovery of reusable materials or treatment of imported or exported radioactive waste would not add materially to the waste needing to be disposed of in the UK or country of destination. If the waste would constitute a material addition, the presumption should be that it will be returned to the country of origin, to a timescale agreed by the competent authorities in the countries of origin and destination;
- the UK has the facilities capable of managing the imported radioactive waste safely and in an economically viable manner;
- any material recovered from the treatment of imported radioactive waste would have a positive economic value in the UK.

10.21 The UK Government intends to develop guidance to set out how these tests should be applied by the regulators.

This chapter sets out the UK Government's policy on the import and export of radioactive substances. The policy is not new. It is intended to reflect existing policy, practice and the regulatory framework.

9. Do you think this chapter on the import and export of radioactive substances accurately reflects existing policy, practice and the regulatory framework? Please provide the reasoning behind your response.

10. Do you have any suggestions on how to improve this chapter on the import and export of radioactive substances? Please provide the reasoning behind your response.

11

Managing nuclear materials and spent nuclear fuel

11.1 In this chapter we discuss the management of nuclear materials. Nuclear materials in this context principally include spent nuclear fuel, uranium, and plutonium. Policy relating to the management of nuclear materials is a reserved matter.

11.2 As a pioneer of civil nuclear power, the UK has been producing and managing a range of nuclear materials since the early 1950s. These nuclear materials are produced and managed throughout various stages of the nuclear fuel cycle at a variety of nuclear facilities around the country.

How nuclear materials are regulated

11.3 Nuclear materials are managed in accordance with relevant safety, security, safeguards, and environmental regulations, as well as relevant IAEA guidance. The principal independent regulators for the management of nuclear materials held on nuclear licensed sites in the UK are the ONR and the national environment agencies for England, Scotland, and Wales. There are no nuclear licensed sites or nuclear materials held in Northern Ireland.

11.4 Nuclear safeguards are a fundamental component of global nuclear non-proliferation. They consist of various reporting and verification processes which assure and demonstrate that civil nuclear material is not diverted unlawfully into non-peaceful purposes. Nuclear safeguards are also vital to a flourishing nuclear industry, both in terms of operations and trade, since these are dependent on the UK acting in line with our international commitments on nuclear safeguards and non-proliferation. The ONR is the UK's domestic safeguards regulator and is responsible for operating a comprehensive nuclear safeguards regulatory function, including the UK State System of Accounting for and Control of Nuclear Materials (SSAC).

Spent fuel management

11.5 Spent fuel is nuclear fuel that has been used in a nuclear reactor and then permanently removed from it. There is a diverse range of spent fuels held in the UK and the potential

for more to arise in the future. The UK Government's policy on the management of spent fuel therefore is to maintain flexibility to allow for different management options.

11.6 Spent fuel can either be managed through interim storage prior to final disposal or through reprocessing. Interim storage involves safely and securely storing the spent fuel, potentially for several decades, until it is conditioned and permanently disposed of as waste in a geological disposal facility (GDF). The interim storage of spent fuels over long periods of time, in line with international good practice, does not preclude reprocessing them at some point in the future. Reprocessing involves separating spent fuel into its component parts. This can be done to separate potentially re-usable material from the spent fuel or to provide an alternative management route for the components of the spent fuel.

11.7 It is the UK Government's policy that spent fuel should not be categorised as waste whilst a future use for the spent fuel can be foreseen by the owner. If a future use cannot be foreseen, it is the responsibility of the owner of the spent fuel to decide whether and when to categorise it as waste for permanent disposal. If an owner categorises spent fuel as a waste for disposal, they should continue to meet the appropriate requirements for safety, security and safeguards applied to spent fuel.

11.8 In the British Energy Security Strategy[100] the UK Government set out its vision for how new and advanced nuclear power will contribute to achieving net zero targets. Meeting this vision will result in new spent fuel arisings from new and advanced nuclear power plants which will need to be managed.

11.9 The UK Government expects developers of new or advanced nuclear power plants to demonstrate appropriate spent fuel and waste management plans, including financing, whilst also ensuring compliance with the necessary regulatory and policy requirements, as laid out in the Funded Decommissioning Programme Guidance.[101]

Reprocessing

11.10 This policy statement replaces paragraphs 64 and 65 of the 2008 nuclear power white paper, *Meeting the Energy Challenge*.[102]

11.11 The UK Government's policy is that the decision of whether or when to reprocess spent fuel is a matter for the owner of the spent fuel. Current industrial scale reprocessing techniques, including those deployed at the Thermal Oxide Reprocessing Plant

[100] UK Government (2022). British Energy Security Strategy. Available at: https://www.gov.uk/government/publications/british-energy-security-strategy
[101] UK Government (2010). Funded Decommissioning Programme Guidance. Available at: https://www.gov.uk/government/consultations/revised-funded-decommissioning-programme-guidance-for-new-nuclear-power-stations
[102] UK Government (2008). Meeting the Energy Challenge: A white paper on nuclear power. Available at: https://www.gov.uk/government/publications/meeting-the-energy-challenge-a-white-paper-on-nuclear-power

(THORP) and the Magnox Reprocessing Plant, separate spent fuel into uranium, plutonium, various waste streams and authorised discharges. The policy on the management of uranium is set out in paragraphs 11.19 to 11.25 below. The policy on the management of plutonium is described in paragraphs 11.26 to 11.31. Radioactive waste management policy is set out in chapters 7 and 8.

11.12 The UK has reprocessed spent fuel on an industrial scale since the 1950s. Commercial industrial scale reprocessing came to an end in the UK with the closure of THORP in 2018. Reprocessing at the Magnox Reprocessing Plant ended in July 2022. The safe, secure management and ultimate disposition of separated plutonium produced from spent fuel reprocessing is one of the most significant and complex challenges the UK faces in managing its nuclear legacy.

11.13 Whilst industrial scale reprocessing of spent fuels in the UK has ended, the UK Government recognises the value of the UK's nuclear fuel cycle knowledge and skills base, both in managing the UK's nuclear legacy and its existing liabilities and in supporting future capabilities and research programmes in the sector. New and advanced reprocessing technologies, with integrated waste management, may be developed in the future which support advanced nuclear reactor systems. The UK Government is continuing to support the advanced nuclear sector through investments in research facilities and programmes.

11.14 However, while the decision to reprocess spent fuel continues to rest with the owner of the fuel, in the absence of new or advanced proposals from industry, new nuclear power stations should proceed on the basis that spent fuel will not be reprocessed and waste management plans including financing should reflect this. Any proposals for future reprocessing of spent fuel would need to be in line with regulatory and policy requirements for the management of all nuclear materials and radioactive waste streams. Should any proposals for reprocessing come forward in the future, they would need to be considered on their merits at the time and the UK Government would expect to consult on them.

Virtual reprocessing

11.15 In order to manage a small quantity of overseas-origin, non-standard spent fuel which was deemed too difficult to reprocess due to technical or economic reasons, the UK Government consulted on and introduced a policy of virtual reprocessing. This policy allowed the NDA to allocate a radiologically equivalent amount of nuclear material and waste to the customer as if the spent fuel had been reprocessed. This ensured the UK did not become a net importer of radioactive waste, enabled historic THORP and Dounreay reprocessing contracts with overseas customers to be fulfilled, and supported the closure of THORP in November 2018. All overseas origin spent fuel which has been managed through this policy is now owned by the NDA. This policy enabled the UK to

safely and securely manage spent fuel which had already been imported into the country for reprocessing purposes.

11.16 The UK Government recognises that virtual reprocessing may be an appropriate management option for spent fuel but any new proposals to apply the principle of virtual reprocessing would need to be considered on a case-by-case basis and be subject to public consultation.

Waste substitution

11.17 Waste substitution is an internationally accepted practice where a radiological equivalent amount of waste is returned to the customer in a form that is acceptable to them. UK Government policy is to return to the country-of-origin radioactive waste that arises from reprocessing spent fuel that has come from overseas. UK Government policy also provides for LLW and ILW arising from reprocessing overseas origin spent fuel to be managed in the UK and a radiological equivalent amount of UK HLW to be returned to the country of origin, along with any additional HLW generated during reprocessing. This policy has enabled radioactive waste arising from historic reprocessing contracts with overseas customers to be returned to their country of origin.

11.18 The UK Government recognises that waste substitution may be an appropriate management option for spent fuel but any new proposals to apply the principle of waste substitution would need to be considered on a case-by-case basis and be subject to public consultation.

Uranium management

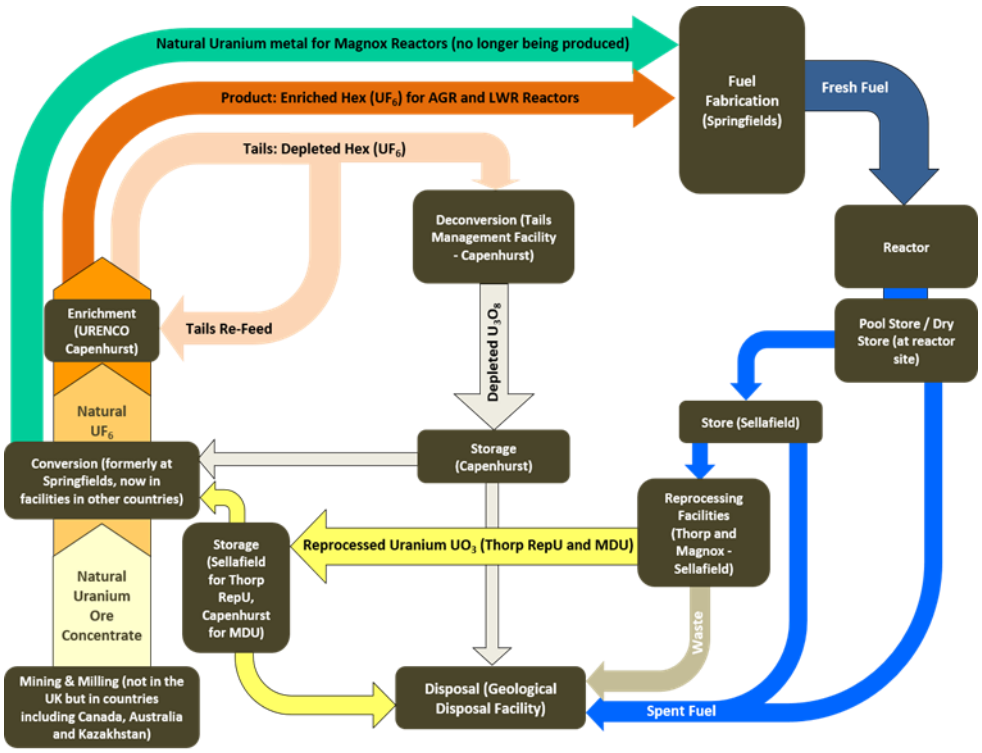


Figure 10. UK nuclear fuel cycle. Note that there is currently no facility at Capenhurst to enrich reprocessed uranium, only natural UF_6.

11.19 Uranium is the raw material used for today's nuclear fuel. Uranium is both radioactive and chemically hazardous and so requires appropriate management arrangements to ensure safe storage and handling, and to minimise any potential damage to people and the environment. There is a diverse range of materials containing uranium currently held in the UK and the potential for more to arise in the future. Figure 10 shows how mined uranium ore is processed into nuclear fuel through conversion, enrichment and fuel fabrication processes and subsequently handled as spent fuel and waste. This diverse range of materials requires bespoke lifecycle management solutions. The UK Government's policy on the management of uranium is to maintain flexibility to allow for different management options.

11.20 Uranium is traded as an asset openly on world markets. In some circumstances carrying out such trade efficiently requires that quantities of uranium be exchanged. Exchanges of uranium in this way are carried out in accordance with the applicable nuclear safeguards obligations and without physical movement of the materials (i.e. transfer of ownership), which avoids the need to transport materials from place to place as they go through the various processes of the nuclear fuel cycle.

11.21 Uranium held in the UK is managed in line with its owners' requirements, including where appropriate, the owners' country's policy for managing uranium, as well as in

accordance with the UK's laws and applicable UK nuclear safeguards obligations. Uranium is managed as an asset and is specifically not categorised as a waste. This is because all uranium has the potential to be used as nuclear fuel, subject to the availability of the appropriate power stations and supporting infrastructure.

11.22 Any decisions on management of uranium should be a matter for the owner of the uranium, subject to meeting necessary regulatory requirements, compliance with any applicable inter-governmental agreements, and the UK's nuclear safeguards obligations. The UK Government does not wish to foreclose options on the use of uranium and as such it is UK Government policy that uranium should not be categorised as waste whilst a future use can be foreseen by the owner. However, if a future use cannot be foreseen, it is the responsibility of the owner of the uranium to decide whether to categorise it as waste for permanent disposal.

Transfer of ownership of uranium to the NDA

11.23 The NDA manages a significant quantity of uranium owned both by the NDA and on behalf of both domestic and overseas customers. The UK Government supports the NDA in taking ownership of overseas-owned uranium that it manages in order to close out historic spent fuel reprocessing contracts and associated liabilities. This is consistent with the NDA's approach to managing other nuclear materials and provides greater certainty of the inventory of uranium which the NDA will need to manage in the future. We would anticipate the NDA taking ownership of overseas owned uranium on a small number of occasions to close out historic spent fuel reprocessing contracts.

11.24 The NDA may take ownership of overseas-owned uranium in order to close out historic spent fuel contracts provided that:

- taking ownership complies with the owner's country's policy for managing uranium;
- the NDA complies with any applicable inter-governmental agreements;
- the NDA complies with any applicable nuclear safeguards obligations;
- the NDA has in place a clear strategy for managing the uranium, which may include sale to a third party for recycling and re-use;
- the NDA has in place acceptable commercial arrangements which represents value for money over the lifecycle of managing the uranium, including disposal.

Re-use of uranium for other purposes not in the nuclear fuel cycle

11.25 Uranium is also used for purposes other than in the nuclear fuel cycle, including in the production of medical isotopes and a potential use as part of the engineered barrier system for the GDF. The UK Government recognises the wider societal and

sustainability benefits which can be achieved through the re-use of uranium for purposes other than in the nuclear fuel cycle, provided that any applicable nuclear safeguards obligations and other regulatory requirements are met.

Plutonium management

11.26 The safe and secure management of civil separated plutonium is a UK Government priority. As a result of spent fuel reprocessing, the UK manages approximately 140 tonnes of this material, all of which is held in storage at the Sellafield site, managed by the NDA. Continued, indefinite, long-term storage leaves a burden of security risks and proliferation sensitivities for future generations to manage. The UK Government is working with the NDA to identify and implement a long-term management solution that puts the UK's plutonium beyond reach. This could be reuse as Mixed Oxide Fuel (MOX) in nuclear reactors or as an immobilised product. Both approaches put the material in a form which reduces the long-term security risks and management burden during storage and is aligned with its ultimate disposal in a GDF.

11.27 In 2011, informed by a public consultation and advice from the NDA, the UK Government outlined a preliminary policy position to reuse civil separated plutonium as MOX fuel in civil nuclear reactors. Any remaining plutonium unsuitable for conversion into MOX would be immobilised and subsequently treated as a waste for disposal. The UK civil plutonium inventory is diverse, including historic scraps, residues, and other contaminated materials. A proportion of the plutonium will have to be immobilised and disposed of as waste, in an appropriate form, as part of any solution. The NDA is investigating immobilisation options for this inventory where it may be possible to make progress in the short term.

11.28 The UK Government has been working closely with the NDA to develop reuse and immobilisation options that could be credibly deployed and is considering these options against a number of critical success factors and interdependencies. A programme to implement a long-term solution will be complex, incorporating significant technical challenges and uncertainties, and take several decades to complete. The UK Government will only be in a position to proceed with implementation of a long-term solution when it is confident that it is technically and commercially viable, meets all safety, security, environmental, safeguards and necessary regulatory requirements, and delivers value for money.

11.29 The UK Government stated in 2011 that overseas-owned plutonium stored in the UK under contractual arrangements, which remains the responsibility of the owners, could be managed alongside UK plutonium or transferred to UK ownership subject to acceptable commercial terms. Since then, the NDA, on behalf of the UK Government, has reached commercial settlements with a number of customers who have transferred

ownership of their plutonium to the NDA. In the long term, this approach will reduce uncertainties and simplify the implementation of a strategy to deal with all of the plutonium managed by the NDA in the UK.

11.30 Due to the size of the plutonium inventory, any long-term disposition solution will take many decades to implement. While work to assess options for long-term disposition is ongoing, the material will continue to be stored in a suite of custom-built facilities that ensure its safety and security in line with regulatory requirements. Over the past decade, materials have continued to be retrieved from older stores and consolidated in more modern state-of-the art facilities such as the Sellafield Product and Residue Store (SPRS). The aim is to transfer materials into the SPRS store and its extensions over the next few decades. To ensure that the plutonium packages can be safely stored in SPRS, they will be repackaged and, where appropriate, some plutonium will be treated to stabilise it for long-term storage. A major new specialised facility to repackage materials is required to support this strategy, known as the Sellafield Product and Residues Store Retreatment Plant (SRP). Irrespective of which disposition solution is pursued, repackaging capabilities including SRP will be required to ensure the continued safe and secure management of these materials.

11.31 The UK will need to retain a skilled workforce to manage plutonium and the capability to implement a long-term disposition solution. To support the maintenance and development of relevant skills for plutonium handling, the NDA is sponsoring an initiative, the Alpha Resilience and Capability (ARC) Programme, in partnership with Sellafield Limited and other organisations managing alpha-related challenges in the UK.

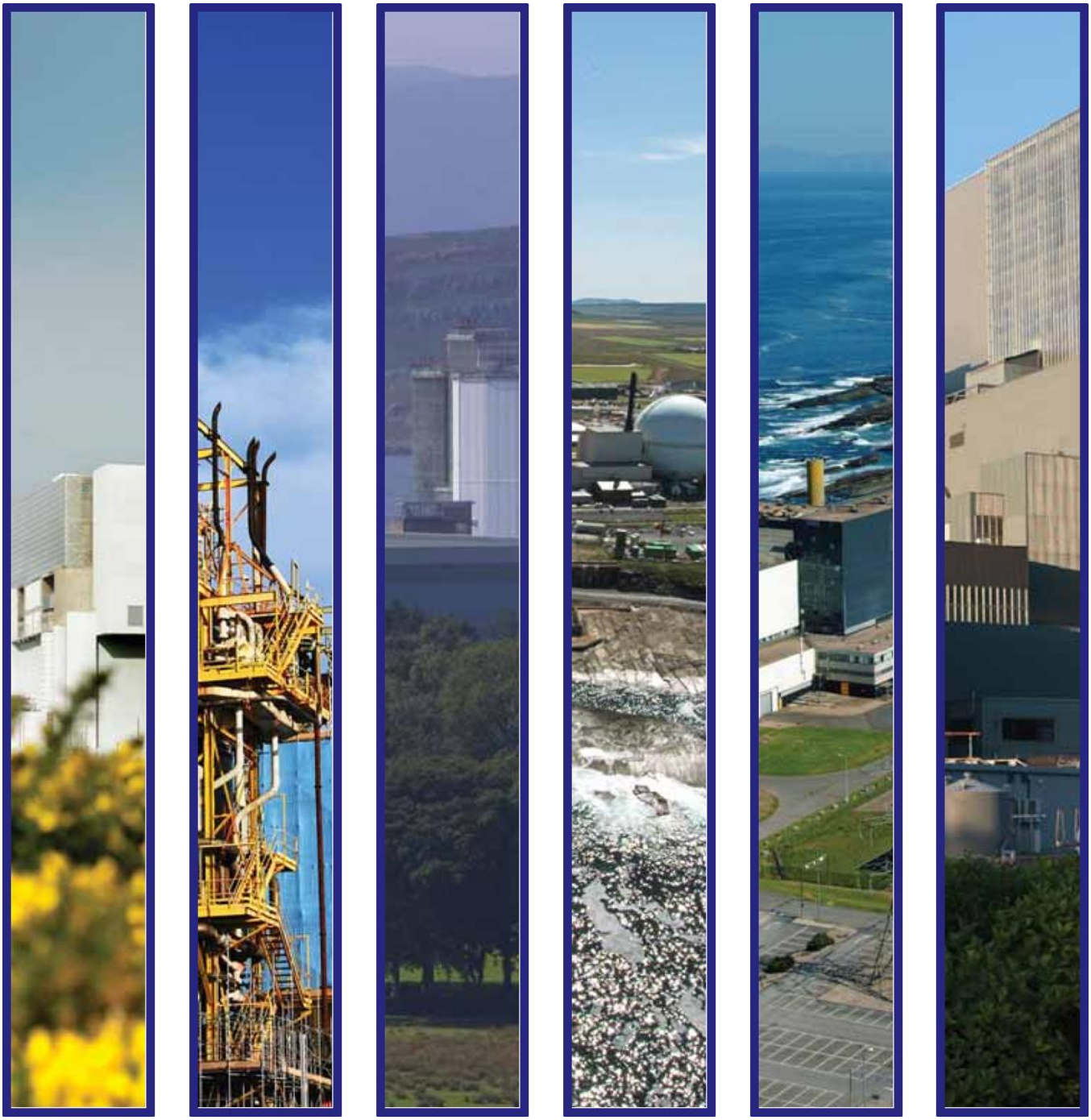
The policy on managing nuclear materials set out above includes consolidated and updated policies on managing spent nuclear fuels and a new policy statement on uranium management that would be implemented if the proposals in Part I, chapter 7 are taken forward. It also includes existing policy on plutonium management.

11. Do you agree that the policy covers everything you would expect it to regarding managing spent fuel and uranium? We are not currently seeking views on plutonium management policy.

12. Do you have any suggestions for how the policy statements on managing spent fuel and uranium could be improved? Please provide the reasoning behind your response.

12

Appendix 1 The Scottish Government's policy on higher activity waste



SCOTLAND'S HIGHER ACTIVITY RADIOACTIVE WASTE POLICY 2011

natural scotland
SCOTTISH GOVERNMENT

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The Scottish Government
Environmental Quality Division
Radioactive Waste Team
1-H Dockside
Victoria Quay
Edinburgh EH6 6QQ

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CONTENTS

1 Introduction

Consultation on the Detailed Statement of Policy of Scotland's Higher Activity Radioactive Waste Policy and the Strategic Environmental Assessment Environmental Report

1.01 The Scottish Government conducted a public consultation on its draft Detailed Statement of Policy (DSP) for Scotland's Higher Activity Radioactive Waste (Ref 1) and the Environmental Report (ER) (Ref 2) on the Strategic Environmental Assessment (SEA) of the Policy. These documents were published on 15 January 2010 along with a Supplementary Information (SI) document (Ref 3) providing additional factual information to assist consultees.

1.02 Responses were requested by 9 April 2010, however the internal approval processes of some respondents meant that they were unable to submit their responses by that date. We were advised of this before the deadline and, in those circumstances, agreed to accept late responses. The last response was received on 26 May 2010.

Consultation on the Annex to the Strategic Environmental Assessment Environmental Report: Supplementary Assessment of Policy Alternatives

1.03 In response to comments received on the DSP and ER published on 15 January 2010 a Supplementary Environmental Assessment was undertaken. The Supplementary Environmental Assessment was published for public consultation on 9 September 2010, inviting responses by 21 October 2010 (Ref 4).

Stakeholder Engagement

1.04 During the initial January to April 2010 consultation period meetings were held with a wide range of stakeholders at locations around Scotland. Following the initial analysis of responses, further meetings were held between September and November 2010 with stakeholders, including organisations and individuals who responded to the consultation. These

meetings provided feedback on the initial analysis of, and outlined the proposed Scottish Government response to, the comments received.

Scottish Government Policy Statement: Response to Comments from the Consultation Processes

1.05 The Scottish Government Policy Statement for higher activity radioactive waste arising in Scotland has been informed by the responses to the consultations on the DSP and ER including the Supplementary Environmental Assessment. These are reflected particularly in the Scottish Government Policy Statement in Section 2 of this document. The structure of the Policy Statement now differs from that proposed in the DSP to describe more clearly the long-term management options for the waste. Section 3, which outlines the Implementation Strategy (IS) for the Policy, also reflects comments received and the content of the Post-Adoption Strategic Environmental Assessment Statement (PAS).

1.06 The Policy Statement draws more heavily on the “Near-surface Disposal Facilities on Land for Solid Radioactive Wastes - Guidance on Requirements for Authorisation - February 2009" (GRA) (Ref 5) than in the DSP. The GRA was specifically referred to in a number of the responses to the DSP.

1.07 The Scottish Government Policy also reflects the 2006 report from the Committee on Radioactive Waste Management (CoRWM), “Managing our Radioactive Waste Safely, CoRWM’s recommendations to Government”. (Ref 6) In particular, recommendation 8 in the report which recommended that consideration should be given to other management options for reactor decommissioning wastes. Such wastes represent a significant volume of the waste produced in Scotland.

1.08 In addition to this document, the Scottish Government is also publishing separately:

- a document summarising its analysis of the responses to the DSP Consultation and the Scottish Government response to them; (Ref 7) and
- a Post-Adoption Strategic Environmental Assessment Statement. (Ref 8)

1.09 The Post-Adoption Strategic Environmental Assessment Statement reaffirms the Scottish Government position that it does not support deep geological disposal of radioactive waste as it does not consider it to be a “reasonable alternative” at this point in time. The Scottish Government

Policy remains that the long-term management of higher activity radioactive waste, as defined in Section 2, should be in near-surface facilities.

1.10 A number of respondents sought additional information and clarification on issues raised in the DSP and ER, some of which were already addressed in part in the SI document. In response to those requests the Scottish Government has now prepared separate documents drawing on information in the DSP, ER and SI, supplemented and updated by additional information received since those documents were published in January 2010.

1.11 These additional documents (Ref 9) cover:

- Radiation and Radioactivity
- Higher Activity Radioactive Waste in Scotland
- Legislative and Regulatory Framework for the Management of Radioactive Waste
- Treatment Options for Radioactive Waste
- International Examples of Near-Surface Facilities
- Retrievability and Reversibility
- Glossary of Terms

1.12 These documents illustrate that the Scottish Government Policy reflects existing practice in other countries, in some cases near-surface facilities have been operating for many years. They will be published separately on the Scottish Government website. The intention is that they will be individual documents which can be revised and updated more easily. This will enable them to reflect more timely any changes in facts or technological advances to inform the next stages of this process, particularly the Implementation Strategy outlined in Section 3.

Scottish Government Policy Statement and Implementation Strategy

1.13 Section 2 of this document is the Scottish Government Policy Statement for higher activity radioactive waste arising in Scotland. The waste to which the Policy applies is defined in Section 2 as are those materials such as spent nuclear fuel which are specifically excluded from the Policy.

1.14 This is a high level Policy which provides the framework for the long-term management of the waste. The Policy is not prescriptive in its approach, recognising that it applies to waste:

- which may not be produced for decades; and

- for which long-term management options may not be feasible at present or have yet to be developed.

1.15 The Policy provides the framework within which regulators, facility operators, waste producers and owners and the Nuclear Decommissioning Authority (NDA) will take decisions on the long-term management of the waste and undertake the work, and duties, for which they are responsible. The Policy enables options to be considered which may require research or development, recognising that advances may be made over time to manage wastes for which long-term options are not currently feasible.

1.16 The Policy is explicit that all options for the long-term management of the waste will be subject to robust regulatory scrutiny and cannot be undertaken without approval by the relevant regulatory bodies.

1.17 The Policy requires all long-term management options to be assessed taking account of fundamental principles, including the application of the Waste Hierarchy (Ref 10) and the Proximity Principle (Ref 11). The presumption is that options will be undertaken as close to the sites where the waste is produced as is practicable.

1.18 Section 3 of this document reflects comments on the DSP and ER on the need to explain in more detail how the Policy will be implemented. The section outlines the process for the Implementation Strategy which will be subject to a Strategic Environmental Assessment and public consultation before it is adopted. Development of the Strategy will be led by the Scottish Government.

Scottish Government Policy

1.19 The Scottish Government Policy is that the long-term management of higher activity radioactive waste, as defined in Section 2, should be in near-surface facilities. Facilities should be located as near to the site where the waste is produced as possible. Developers will need to demonstrate how the facilities will be monitored and how waste packages, or waste, could be retrieved. All long-term waste management options will be subject to robust regulatory requirements.

2 Scottish Government Policy Statement

This is a high level Policy which provides the framework for the long-term management of higher activity radioactive waste arising in Scotland. The Policy is not prescriptive in its approach, recognising that it applies to waste:

- which may not be produced for decades; and
- for which long-term management options may not be feasible at present or have yet to be developed.

The Policy Statement contains the following:

2.01 Policy Aim and Principles

2.01.01 The **aim** of the Policy is to ensure that all activities for the long-term management of the waste are made in a way that protects the health and interests of people and the integrity of the environment now and in the future. This aim needs to be considered at the time long-term management decisions are made and when treatment or storage or disposal of the waste is undertaken. These decisions will need to recognise the risk of foreclosing alternative long-term management options and the future impact of these long-term management activities on people and the environment.

2.01.02 Underpinning this aim are the **principles** that:

- the level of protection provided to people and the environment against radiological and any other hazards of the treatment or storage or disposal of the waste at the time decisions are taken, now and in the future, is consistent with

the standards in place at the time those decisions are made; and

- developers and operators of facilities will engage with stakeholders, including local communities where any facilities may be located, throughout the process of managing the waste.

2.01.03 These fundamental principles are not the only ones which might be applied in decision making for the long-term management of radioactive waste, For example, the “Near-surface Disposal Facilities on Land for Solid Radioactive Wastes - Guidance on Requirements for Authorisation - February 2009" (GRA) (Ref 5) identifies others which the regulators will apply in considering near-surface disposal facilities. The Policy does not preclude consideration of other principles as required.

2.01.04 In addition to the fundamental principles, there are two principles which the Policy requires to be explicitly addressed when considering long-term management options for the waste. These are the Waste Hierarchy and the Proximity Principle. These two principles will be fundamental in considering long-term management option of the waste as described in Section 2.04 below in relation to treatment or storage or disposal options.

2.01.05 The Policy requires application of the principles of the Waste Hierarchy to the long-term management of the waste. This is already a requirement for the management of non-radioactive waste and for low level radioactive waste. The Hierarchy requires all waste producers to consider waste management with regard to prevention, minimisation, preparation for re-use, recycling and other recovery with disposal as the final option. Regulators will take account of the application of the Waste Hierarchy when scrutinising proposals for the long-term management of the waste.

2.01.06 The Policy requires long-term management options to take account of the Proximity Principle. The requirement to consider the Proximity Principle is a key element of European Union environmental and municipal waste management Policy, introduced in Article 5 of the Waste Framework Directive (75/442/EEC) (Ref 11) and reflected in subsequent Directives the latest being Article 16 in the Revised Waste Framework Directive (2008/98/EC) (Ref 12). Whilst the Directive itself does not apply to radioactive waste, the principle of proximity is one

which is already generally used in considering radioactive waste management options.

2.01.07 The Policy requires this aim and these principles to be demonstrated by those proposing long-term management options including the development of treatment or storage or disposal facilities. All long-term management options will be subject to robust regulation by the relevant regulators.

2.02 Policy Framework and Scope

2.02.01 The Policy Statement provides the framework for decisions to be taken on the long-term management of the waste arising in Scotland. It provides clarity on the options available to those who produce, own, manage and regulate the waste in the long-term. It enables consideration of technological advances, which are being developed now, or may be developed in the future, when making long-term management decisions.

2.02.02 The Policy is not prescriptive on how to manage the waste or on the design and construction of facilities, rather it sets the parameters within which such decisions may be made. The Policy enables a risk informed approach to managing and regulating the waste.

2.02.03 Higher activity radioactive waste is produced in Scotland from operations in the **nuclear** and **non-nuclear industries** as well as from **defence establishments**. There are two types of civil nuclear sites:

- operational nuclear power stations which are generating electricity;

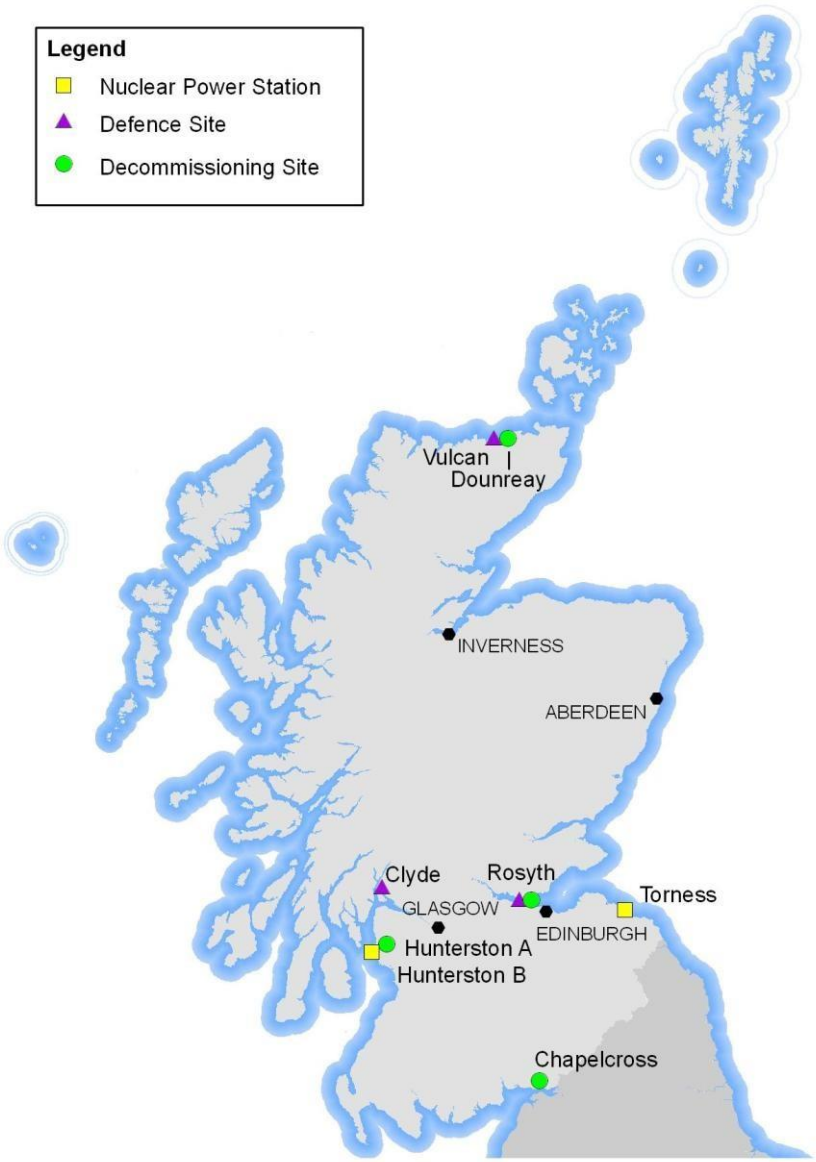
and

- decommissioning sites which have undertaken research on, or generated power from, nuclear energy or undertaken activities related to that research or generation.

The Map at **Figure 1** illustrates the civil nuclear and defence sites in Scotland which produce radioactive waste. The Policy does not apply to all of these sites.

2.02.04 The non-nuclear industries which produce radioactive waste include health and education and other industrial users such as oil and gas. Radioactive waste from non-nuclear industry sectors arises at locations throughout Scotland.

Figure 1: Location of Civil Nuclear Industry and Defence Sites in Scotland



2.02.05 The Policy applies to the operational and decommissioning waste generated at nuclear sites and from nonnuclear industry activities throughout Scotland. The nuclear sites in Scotland to which the Policy applies are shown in Figure 2 which also describes the waste which is estimated will arise from activities on those sites. The waste from these nuclear sites and from non-nuclear industry sectors is regulated under the Radioactive Substances Act 1993 (RSA93). (Ref 13)

2.02.06 The Policy does not apply to all of the sites in Figure 1. It does not apply to radioactive waste from those **defence establishments** which are not subject to regulation under the Radioactive Substances Act 1993 (RSA93). This includes waste arising from the operational nuclear submarine bases on the Clyde and from the decommissioning and dismantling of redundant nuclear submarines including those berthed at the former Defence Establishment at Rosyth.

2.02.07 The Policy also does not apply to radioactive waste which has already been dealt with under the policies of previous governments. This includes radioactive waste which is the subject of previous or existing contractual arrangements, including waste sent to facilities outside of Scotland, including Sellafield.

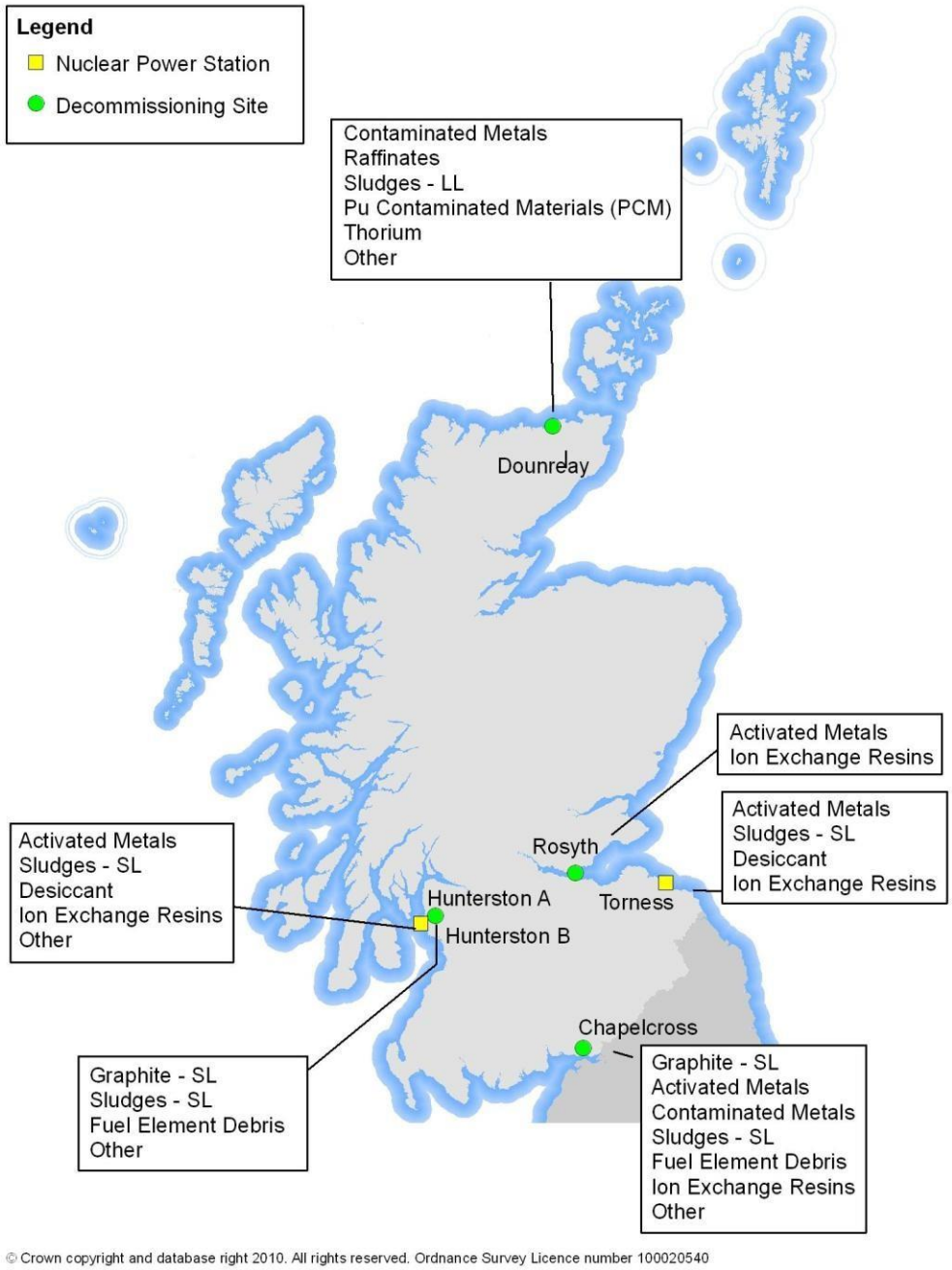
2.03 Radioactive Waste to which the Policy Applies

2.03.01 The radioactive waste is primarily solid waste, such as graphite and metal, but also includes waste such as sludges and liquid waste, such as raffinates, which may be solidified as part of a treatment or packaging process.

2.03.02 For the purposes of this Policy the term higher activity radioactive waste means:

- Radioactive waste defined in current UK categorisations as Intermediate Level Waste (ILW).
- Intermediate Level Waste is waste which has radioactivity levels exceeding the upper boundaries for Low Level Waste and which does not generate enough heat for this to need to be taken into account in the design of treatment or storage or disposal facilities.

Figure 2: Location of Nuclear Sites in Scotland to which the Higher Activity Radioactive Waste Policy Applies



2.03.03 **The Policy also applies to** waste which is not higher activity radioactive waste as defined in paragraph 2.03.02. This is waste for which the most appropriate long-term management option may be the same as that for higher activity radioactive waste. This includes:

- certain wastes categorised as Low Level Waste (LLW), which by their nature are not currently suitable for disposal in existing LLW facilities as, for example, they may be longer-lived waste.
- LLW is as defined in the March 2007 LLW Policy (Ref 14).

2.03.04 **For the purposes of this Policy the term higher activity radioactive waste does not mean:**

- **High Level Waste** (HLW) as there is no HLW in Scotland; **and**

- radioactive substances and material which are not currently classified as radioactive waste, such as **spent nuclear fuel, plutonium, uranium or other such radioactive fuels and materials.**

2.03.05 If, in the future, HLW is produced or any of the substances and materials described in paragraph 2.03.04 were to be classified as waste or were to be classified as HLW, as is probable for such materials, they would not be covered by this Policy.

2.04 Long-Term Waste Management Options

2.04.01 The waste to which this Policy applies will remain radioactive for very long periods of time. How long it will remain radioactive will depend on the radionuclides contained within it and could remain radioactive for up to hundreds of thousands of years.

2.04.02 **It may be many years, even decades, before the waste is produced and is in a form which needs to be managed.** This is particularly true of nuclear sites where facilities may not begin to be dismantled and decommissioned until many years from now. These lengthy timescales mean that there have to be options for managing the waste in the long-term.

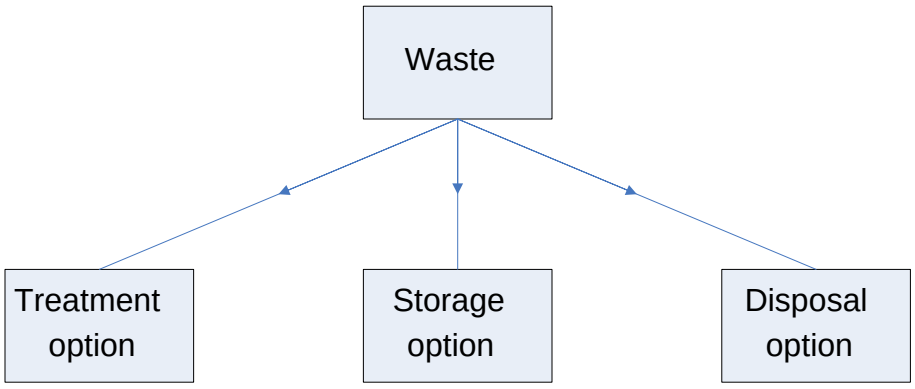
2.04.03 **There remain uncertainties as to how to deal with much of the waste, therefore the Scottish Government Policy at the present time is that long-term storage is still the primary long-term management option.** However, recognising that there have been technological developments which enable treatment of some radioactive waste, primarily to reduce volumes, the Scottish Government Policy enables such options to be considered. Similarly, there are international examples of near-surface disposal facilities for radioactive waste that is similar to some of the waste we have in Scotland. The Scottish Government Policy is consistent with such international approaches.

2.04.04 In line with waste management principles, notably the Waste Hierarchy and the Proximity Principle, the Policy requires that the waste should be dealt with as close as possible to the site where it is produced. This means that long-term radioactive waste management facilities should be as near to those sites as practicable so that the need to transport the waste over long distances is minimal.

2.04.05 The Scottish Government Policy recognises these uncertainties and developments and requires that the waste should be managed in the long-term in near-surface facilities where it can be monitored and where there is the capability of retrieving it.

2.04.06 There are at present three principle options for the long-term management of the waste: treatment; storage; disposal.

Figure 3: Principle options for the long-term management of radioactive waste



2.04.07 The Policy does not prescribe how treatment or storage or disposal should be undertaken. Such decisions will be made on a case by case basis recognising that for some of the waste one or more of these options may not yet be feasible. The fact that the Policy allows treatment or storage or disposal does not mean that all waste will need to be managed in each of these three options, rather that each option will be available for consideration if appropriate for a particular form of waste.

Treatment

2.04.08 The Policy allows consideration of waste treatment as a management option. It does not prescribe types of treatment as it was clear from the Strategic Environmental Assessment (SEA) that new technologies are being developed and some are in the very early stages of development. The Policy allows such advances to be considered.

2.04.09 Whilst the Policy does not prescribe specific types of treatment it does prescribe what treatment is not as regards the Policy. The term **"treatment"** as used **in this Policy excludes** the reprocessing of spent nuclear fuel for the recovery of plutonium and uranium as the Policy does not apply to spent nuclear fuel or to those nuclear materials.

2.04.10 The Policy allows treatment options to be used to comply with the Waste Hierarchy, for example, to minimise the volume of waste and to recover material. This recognises that some treatment options may not be available in Scotland, or even in other parts of the UK.

2.04.11 The Policy allows consideration to be given to the transport of the waste from where it arises for treatment elsewhere in the UK, and to the export of the waste overseas, for the reasons prescribed below, in line with international agreements and robust regulatory requirements.

2.04.12 The export of waste to other OECD (Organisation for Economic Co-operation and Development) and EU (European Union) countries may only be authorised or consented to by the competent authority in light of an assessment of all practicable options, and should not be permitted except:

- for the recovery of reusable materials; or

- for treatment that will make the subsequent storage or disposal of the waste more manageable.

2.04.13 In all cases where such processes would add materially to the waste needing to be disposed of in a country of destination, including in other parts of the UK, the presumption should be that it will be returned to Scotland, to a timescale agreed by regulators and competent authorities in Scotland and in the country of destination.

2.04.14 The Policy does not allow disposal of waste overseas other than as described in paragraphs 2.04.12 and 2.04.13. It will be for the competent authorities in those countries to assess if the waste adds materially to that in their country.

Storage

2.04.15 **Storage** has a specific internationally recognised and accepted definition when applied to radioactive waste management. **For the purposes of the Policy storage is placing the waste in a suitable facility with the intent to retrieve it at a later time**.

2.04.16 **When waste is managed in a store it is always on the basis that it will have to be retrieved**. This means that the waste is regulated on the basis that its **retrievability**, and the way that it is being **monitored**, whilst in storage, can be demonstrated to the satisfaction of the regulator. This is reflected in the robust regulatory requirements under which radioactive waste is already regulated in Scotland.

2.04.17 The Policy does not specify what monitoring is required or how retrievability will be demonstrated. It will be for operators to demonstrate how this is to be done in the design and management plan for any storage facility to the satisfaction of the regulators. This reflects the assumption that storage is an interim stage in the long-term management of the waste which will require further handling before disposal.

2.04.18 The Policy does not specify what a storage facility should look like or how it should be constructed. It also does not specify a specific depth for near-surface as this will need to take account of the geography and geology of the location for any facility. **However, the presumption is that a storage facility will be as near to the surface**

as practicable taking account of all factors. Existing stores in Scotland are generally located on or very near to the surface.

2.04.19 Decisions will be made by those developing storage facilities. They will need to satisfy regulators as to their ability to meet health, safety, security and environmental requirements. **For the purposes of the Policy near-surface for storage facilities means**:

- Facilities located at the surface of the ground or at depths down to several tens of metres below the surface.
- Near-surface facilities may use the geology (rock structure) to provide an environmental safety function, but some may rely solely on engineered barriers.
- Near-surface facilities may use existing structures if an acceptable safety case is made.

2.04.20 In the nuclear industry storage facilities are currently on nuclear licensed sites. This is generally not the case for non-nuclear industries where the volumes of waste are much smaller and where it is not possible to provide long-term storage facilities on individual premises, for example in hospitals.

2.04.21 The circumstances where the waste is produced and where it can be stored may be in different locations, particularly for non-nuclear industry waste producers. Therefore there will not be a prescriptive definition of **near to the site for storage facilities**. **The presumption in the Policy is that storage facilities will be as near to the site where waste is produced as practicable**. Decisions will be made on a case by case basis and will be subject to robust regulatory requirements and the principles underlying the Policy.

2.04.22 In circumstances where the waste needs to be transported for storage at a site near to but other than the one on which it was produced, it will be for waste producers and owners to determine, to the satisfaction of the regulators, the implications of transportation. This will require consideration of the environment, health, safety, security and **transport** requirements for storage options. This is consistent with the principles underpinning the Policy, particularly the Proximity Principle.

2.04.23 The Policy intent for **non-nuclear industry waste producers**, the majority of whom produce very small amounts of

radioactive waste, is that they will have the opportunity to use appropriate sites and facilities which are in proximity to them and are operated by others, including by the Nuclear Decommissioning Authority (NDA) or its contractors. However, there may be circumstances, for example where large volumes of waste are being produced, where it will be appropriate for such non-nuclear industry waste producers to provide their own facilities. These facilities will be subject to the same requirements and robust regulatory controls that apply to waste from nuclear industry activities.

2.04.24 There will be a need to ensure that storage facilities are capable of managing the waste in the **long-term**. Long-term does not mean indefinite storage but it may mean waste is stored for many decades.

2.04.25 The Policy requires that decisions to construct new, or adapt existing storage facilities, should be based on compliance with a period of stability and capability of at least 100 years. This means that a facility will have the capability to last for at least 100 years, with the capability of extension beyond 100 years, including the replacement or refurbishment of its structures and services. The capability of these facilities will be reviewed at regular intervals, including by regulators, to ensure that they can be maintained for at least 100 years and beyond, if necessary.

Disposal

2.04.26 **Disposal** has a specific internationally recognised and accepted definition when applied to radioactive waste management. **For the purposes of the Policy disposal is placing the waste in a suitable specialised land-based facility without the intent to retrieve it at a later time**.

2.04.27 **When waste is managed in a disposal facility it is on the basis that there is no intention to retrieve it. It is not that the waste cannot be retrieved, if that proved to be necessary, rather that there is no intention to retrieve it.** It is not the facility which determines whether waste is regarded as stored or disposed of, it is the intention which determines whether a facility is for storage or disposal. The time waste is placed in a disposal facility is when disposal occurs, even if the facility is eventually closed many years later.

2.04.28 Disposal facilities, unlike storage facilities, have not been designed in the past with the intention to retrieve either the waste packages or the waste itself. Similarly, any monitoring requirements have reflected the fact that there was no intention to retrieve the waste. However, whilst there may still be no intention to retrieve waste, many countries are now looking at the issues of monitoring and retrievability for long-term disposal facilities.

2.04.29 **The Policy requires that disposal facilities should be monitored and that there should be a capability to retrieve waste packages and waste if necessary.** The Policy does not specify what monitoring is required or how retrievability will be demonstrated. It will be for operators to demonstrate how this is to be done in the design and management plan for any disposal facility to the satisfaction of the regulators. This reflects the GRA which provides guidance on the regulatory requirements and addresses both monitoring and retrievability.

2.04.30 The Policy does not specify what a disposal facility should look like or how it should be constructed. It also does not specify a specific depth for near-surface as this will need to take account of the geography and geology of the location for any facility. **This is consistent with the GRA approach and reflects International examples of near-surface disposal facilities. The presumption in the Policy is that a disposal facility will be as near to the surface as practicable taking account of all factors.**

2.04.31 Decisions will be made by those developing disposal facilities. They will need to satisfy regulators as to their ability to meet health, safety, security and environmental requirements. **For the purposes of the Policy near-surface for disposal facilities means**:

- Facilities located at the surface of the ground or at depths down to several tens of metres below the surface.
- Near-surface facilities may use the geology (rock structure) to provide an environmental safety function, but some may rely solely on engineered barriers.
- Near-surface facilities may use existing structures if an acceptable safety case is made.

2.04.32 The Policy recognises that at present it may be possible to dispose of relatively small volumes of the waste in Scotland and that such waste may arise at different sites around Scotland. The circumstances where waste is produced and where it can be disposed of may be in different locations, particularly for non-nuclear industry waste producers. Therefore there will not be a prescriptive definition of **near to the site for disposal facilities. However, the presumption will be that disposal facilities will be as near to the site where waste is produced as practicable**. Decisions will be made on a case by case basis and will be subject to robust regulatory requirements and the principles underlying the Policy.

2.04.33 In circumstances where the waste needs to be transported for disposal at a site other than the one on which it was produced, it will be for waste producers and owners to determine, to the satisfaction of the regulators, the implications of transportation. This will require consideration of the environment, health, safety, security and **transport** requirements for disposal options. This is consistent with the principles underpinning the Policy, particularly the Proximity Principle.

2.04.34 The Policy intent for **non-nuclear industry waste producers,** the majority of whom produce very small amounts of radioactive waste, is that they will have the opportunity to use appropriate sites and facilities which are in proximity to them and are operated by others, including by the NDA or its contractors. However, there may be circumstances, for example where large volumes of waste are being produced, where it will be appropriate for such non-nuclear industry waste producers to provide their own facilities. These facilities will be subject to the same requirements and robust regulatory controls that apply to waste from nuclear industry activities.

2.04.35 Disposal facilities need to be capable of existing for much longer time periods than storage facilities. It is not possible to put a specific time capability on such facilities in the same way as for storage facilities where, unlike disposal, there is always the intention to retrieve waste. Disposal facilities will need to be designed to contain waste for much longer periods. Developers will need to satisfy regulators that an environmental safety case can be met. Such an environmental safety case will need to comply with the principle that the level of protection provided to people and the environment against radiological hazards of the waste, both at the time of disposal and in the future, is consistent with the standards at the time of disposal.

2.04.36 The presumption in the Policy is that, whilst no specific period is prescribed, current practice in the management of radioactive waste facilities, reflects that up to 300 years is an acceptable period for institutional control. In this context institutional control means that there will be control and monitoring of a disposal facility to the satisfaction of regulators to ensure that there is protection of the environment and people. The issue of active institutional control is addressed in the GRA.

2.05 Planning Assumptions for Waste Producers and Owners

2.05.01 **Nuclear site operators** in Scotland have to make provision, including financial provision, in their plans for the long-term management of the waste they produce. They will need to take account of the Policy in making their future planning assumptions, taking account of regulatory requirements.

2.05.02 It is for the NDA, its Site Licence Companies and non-NDA site operators to consider how they reflect the Policy in their forward planning assumptions. Their assumptions will need to take account of their own individual decisions on long-term management options, including treatment or packaging options, and for either near-surface, near to the site storage or near-surface, near to the site disposal. These decisions will be subject to robust regulatory requirements.

2.05.03 **Non-nuclear industry waste producers** also make planning assumptions for managing their waste but the Policy does not require them to make provision for near to the site, near-surface storage or near surface, near site disposal requirements in the same manner as the nuclear industry waste producers who produce the vast majority of the waste to which the Policy applies. Non-nuclear industry waste producers are still subject to robust regulatory controls but they have the option of considering the availability of any potential new treatment or storage or disposal options in Scotland, which are in proximity to them. Such arrangements will be subject to appropriate commercial agreements with facility providers.

Engagement and Consultation with Stakeholders

2.05.04 The Scottish Government expects waste producers and owners, developers and operators to engage at an early stage with local

communities and the relevant regulatory and permitting authorities to ensure their views are taken into account when plans for treatment or storage or disposal facilities are being developed. All parties involved in any proposals to provide new, or alter existing, facilities for treatment or storage or disposal will be expected to engage and consult with local, national, UK, EU and international stakeholders, in a manner appropriate for their proposals.

2.06 Regulation and Permitting

2.06.01 There is already a well established regulatory framework in Scotland for the management of the waste. This Policy does not alter the existing legislative and regulatory arrangements.

2.06.02 Waste management activities by operators, or others, covered by this Policy will need to comply with the regulatory requirements in place at the time any action is proposed. This includes complying with any applicable changes in legislation that occur whilst long-term management options are being considered or a facility is being maintained or developed. Proposals will be scrutinised and regulated by the environment, health, safety, security and transport regulators, who will take account of best practice in Scotland and elsewhere in considering any permitting.

2.06.03 Any proposals for:

- the construction of new treatment or storage or disposal facilities, or
- any other facilities for managing the waste, or
- the adaptation of existing facilities for managing the waste,

will need to comply with the planning legislation in place at the time an application is made.

2.06.04 The Policy expects a developer of a facility to take account of public and stakeholder views concerning the amenity, value and impact, including visual impact, of any such construction at the earliest stage possible in the process. It will also be for a developer to demonstrate how it has take account of such views. It is for the relevant

planning authority to consider the need for any conditions attached to such consents.

2.07 Policy Implementation and Review

2.07.01 The waste to which the Policy applies may be radioactive for up to many hundreds of thousands of years. This Policy reflects technological advances in recent years which are enabling the waste to be treated, or managed, in different ways.
It is likely that there will be further technological developments in future years which may result in new and better methods of managing the waste than are available at the present time.

2.07.02 There will be a Strategy to implement the Policy which will be subject to a Strategic Environmental Assessment. The Strategy Implementation process will be led by the Scottish Government. Section 3 of this document explains how the process will be managed and issues which will need to be addressed within the context of the Strategy.

2.07.03 The Policy is subject to a review process to enable consideration of technological and societal developments, particularly as regards innovation and research and development. Reviews will be led by the Scottish Government and will be undertaken at intervals of no more than 10 years after publication of the Policy. This will not preclude a review in a shorter timeframe if appropriate.

2.08 Policy Summary

02.08.01 This is a high level Policy which provides the framework for the long-term management of higher activity radioactive waste arising in Scotland. The Policy is not prescriptive in its approach, recognising that it will be applicable to waste:

- which may not be produced for decades; and
- for which long-term management options may not be feasible at present or have yet to be developed.

02.08.02 The Policy provides the framework within which regulators, facility operators, waste producers and owners and the NDA will take decisions on the long-term management of the waste and undertake the work, and duties, for which they are responsible. The Policy enables options to be considered which may require research or development, recognising that advances may be made over time to manage wastes for which long-term options are not currently feasible.

02.08.03 The Policy is explicit that all options for the long-term management of the waste will be subject to robust regulatory scrutiny and cannot be undertaken without approval by the relevant regulatory bodies.

02.08.04 The Post-Adoption Strategic Environmental Assessment Statement reaffirms the Scottish Government position that it does not support deep geological disposal of radioactive waste as it does not consider it to be a "reasonable alternative" at this point in time. The Scottish Government Policy remains that the long-term management of higher activity radioactive waste, as defined in Section 2, should be in near-surface facilities.

02.08.05 The Scottish Government Policy is that the long-term management of higher activity radioactive waste, as defined in Section 2, should be in near-surface facilities. Facilities should be located as near to the site where the waste is produced as possible. Developers will need to demonstrate how the facilities will be monitored and how waste packages, or waste, could be retrieved. All long-term waste management options will be subject to robust regulatory requirements.

02.08.06 The Policy requires all long-term management options to be assessed taking account of fundamental principles, including the application of the Waste Hierarchy and the Proximity Principle. The presumption is that options will be undertaken as close to the sites where waste is produced as is practicable.

02.08.07 The Policy allows waste producers and owners to consider long-term management options for:

- treatment, including sending it to another location for treatment, either in Scotland or elsewhere including overseas, subject to any requirements by the relevant regulators in the UK and overseas for the return of the waste;

OR

- storage in near-surface facilities which are near to the site where waste is produced;

OR

- disposal in near-surface facilities which are near to the site where waste is produced.

02.08.08 The Scottish Government expects waste producers and owners, developers and operators to engage at an early stage with local communities and the relevant regulatory and permitting authorities to ensure their views are taken into account when plans for treatment or storage or disposal facilities are being developed. All parties involved in any proposals to provide new, or alter existing, facilities for treatment or storage or disposal will be expected to engage and consult with local, national, UK, EU and international stakeholders, as appropriate.

02.08.09 There will be a Strategy to implement the Policy which will be subject to its own Strategic Environmental Assessment. The Strategy Implementation process is described in Section 3 of this document.

02.08.10 The Policy will be subject to review by the Scottish Government at interval of no more than ten years after publication of the Policy. This will not preclude reviews within ten years if necessary.

3 Scottish Government Policy Implementation Strategy and Strategic Environmental Assessment

3.01 Introduction

3.01.01 The Scottish Government Policy for the long-term management of higher -activity radioactive waste is stated in Section 2 of this document. Responses to the consultation on the draft Detailed Statement of Policy (DSP) (Ref 1) and the Environmental Report (ER) (Ref 2) on its Strategic Environmental Assessment (SEA) heavily endorsed the Scottish Government proposal that a Strategy would be required to implement the Policy should be subject to a SEA.

3.01.02 This Section outlines the Scottish Government proposals for the Implementation Strategy (IS) and its SEA. These reflect particularly, the Next Steps proposed in the Post-Adoption Strategic Environmental Assessment Statement (PAS) (Ref 4). These initial proposals are not exhaustive. They reflect the position at the present time and, as was the case in developing the Policy Statement in Section 2, it is likely that they will be adapted and revised to take account of changing circumstances as the IS is developed.

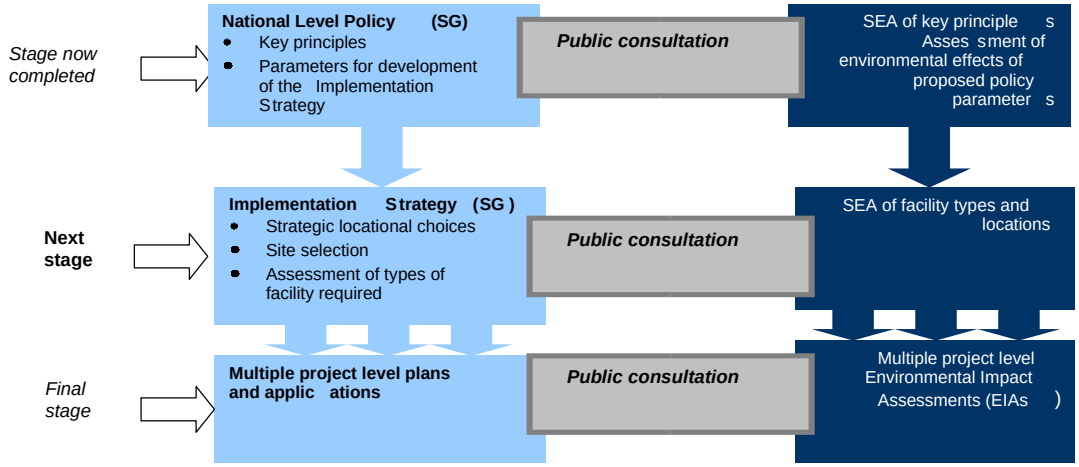
3.01.03 The Scottish Government will lead the process to develop the IS and its SEA. In doing so the Scottish Government will continue to engage with stakeholders whose input to the development of the Policy Statement has been invaluable.

Timescales

3.01.04 The Scottish Government has adopted a stepwise approach to the development of the Policy Statement and this will continue in the IS stage. **Figure 3** illustrates the overall process to develop and implement the Policy for the long-term management of the waste.

3.01.05 The first stage, development of the Policy Statement, was undertaken between 2007 and 2010. It is not the intention at this point in time to define a specific date to complete the second stage, the development of a Strategy. The process to develop the IS will require detailed planning and it will be at that point that milestones will be set.

Figure 3: Decision Making and Environmental Assessment of Policy Development and Implementation



3.02 Strategy Process

3.02.01 The Scottish Government will continue its stepwise approach in future stages of the process as described in **Figure 3**. The process will be informed by the Policy Statement and the PAS as well as by comments received in response to the consultation on the DSP and ER. It is clear that more detailed information will be needed to inform the IS and its SEA as indicated in the following paragraphs.

Managing the Process and Engaging with Stakeholders

3.02.02 The IS process will be led by the Scottish Government and will involve engagement with stakeholders in the same manner as the development of the draft DSP and its ER. Ongoing engagement with stakeholders will be needed as the IS and its SEA are developed and there will be a formal public consultation on the draft IS and its SEA. In

line with a stepwise approach, it is not intended that every aspect of the IS and its SEA will be prescribed now. This Section outlines the initial approach which will need to be reviewed and adjusted as appropriate to reflect circumstances and the different stages of the work.

3.02.03 The Scottish Government will adopt a project management approach with a Project Board and associated supporting working groups. The Project Board will be chaired by the Scottish Government and will initially comprise representatives of the Scottish Government, Regulators (environment, health, safety, security and transport), local authorities in Scotland and the Nuclear Decommissioning Authority (NDA). The Project Board will have terms of reference which will be published on the Scottish Government website as will agendas, papers and minutes of meetings. Membership and terms of reference may be reviewed and adjusted, if necessary.

3.02.04 The Project Board will be able to set up associated supporting working groups to inform and assist in the development of the IS and its SEA. The membership of these groups will be dependant on the topics they will be considering and will be similar, but not restricted to, that of the Project Board: representatives of the Scottish Government, Regulators, local authorities in Scotland and the NDA. In light of previous experience, we would expect such supporting groups to include representatives of site operating companies, local stakeholders, including members of Site Stakeholder Groups (SSGs), the Committee on Radioactive Waste Management (CoRWM) and non-governmental organisations.

3.02.05 Supporting groups will have their own terms of reference which will be published on the Scottish Government website as will agendas, papers and minutes of meetings. They may reflect the initial issues to be addressed as described below and, as with the Project Board, membership and terms of reference may be reviewed and adjusted, if necessary.

Principles

3.02.06 The Policy clearly states the principles which underpin it. These principles will need to be addressed in the IS and its SEA and will

need in turn to be underpinned by information and evidence to support the IS. Section 5 of the PAS addresses environmental assessment issues to be considered in the next stage. These are issues which have been identified now. They are not restrictive as it is likely that others will be identified as the IS and its SEA are developed. It is also worth reiterating here that in all circumstances the IS and SEA will reflect regulatory principles applicable at the time decisions are taken.

3.03 Strategy Content

3.03.01 Section 3.02 above describes the process to manage the development of the IS and its SEA. This section addresses the content of the IS and its SEA. Adopting a stepwise approach means that the content is not restricted to the issues identified in this document or the PAS. They are the initial considerations which will be reviewed and revised as necessary as information and evidence are obtained and analysed. This will involve testing the environmental consequences of the IS and identifying mitigation measures that can be put in place to ensure that implementation of the Policy avoids generating unexpected or significant negative environmental effects as far as possible.

3.03.02 The information gathered during the SEA of the Policy will form a starting point for the IS and its SEA. The key issues which should be addressed in the initial work on the next stage are:

- Knowledge and Information Management
- Legislation, Regulation and Guidance
- Waste Identification, Treatment and Packaging
- Location, Design and Construction of Treatment or Storage or Disposal Facilities
- Social and Economic Costs and Benefits
- Best Practice and Experience in the UK and Internationally

Knowledge and Information Management: Baseline Assessments, Monitoring and Long-Term Maintenance

3.03.03 The Policy Statement and PAS are clear and consistent that more information is needed for the IS and its SEA. These will form a basis for determining the baseline information for the IS and its SEA.

3.03.04 There is also a clear need for information and knowledge to be maintained in the long-term to manage the waste. There will be a need for information on specific issues and a more general need to consider how information and knowledge should be maintained so that it is accessible now and to future generations. Intergenerational equity will be a key consideration for the IS along with the following issues:

- what research and development may be needed to deliver the IS;
- how new innovations and technology will be considered to inform future decisions;
- how skills and experience can be maintained over long timescales; and
- how best practice and experience elsewhere in the World is considered.

3.03.05 This approach will ensure that environmental impact is minimised and linked with the cost implications of the Policy as well as informing monitoring requirements. A baseline is required for monitoring to allow for future assessments to clearly identify the impact of any future facility (or facilities) and its (or their) performance in relation to authorised radioactive discharge limits. Monitoring of non-radiological matters may also be required. The IS and its SEA will develop further information which can be used to inform the development of a baseline. Further site specific baseline evidence will be required to be gathered at the later project stage through Environmental Impact Assessment (EIA).

3.03.06 Monitoring should set thresholds for specific contaminants, which trigger action if they are exceeded. As required by the "Near surface Disposal Facilities on Land for Solid Radioactive Wastes - Guidance on Requirements for Authorisation - February 2009" (GRA) (Ref 5), published jointly by the environmental regulators in the UK, in the interests of avoiding placing an unreasonable emphasis on current or long-term future action, the safety of any future facility should not be reliant on post-authorisation period monitoring. The IS and project level assessments will confirm the detailed monitoring requirements. In line with respondent's comments, future monitoring should be delivered in an open and participative manner, involving stakeholders and communities.

Legislation, Regulation and Guidance

3.03.07 National, UK and international legislation, regulations and guidance are required to be followed at all times in the IS and in any subsequent project for the development of, or siting of, facilities. This will include the application of the concepts of Best Practicable Environmental Option (BPEO), Best Practicable Means (BPM) and Best Available Technology (BAT) to underpin the development of the IS and to steer consideration of options within its SEA. Other concepts including As Low as Reasonably Practicable (ALARP) and As Low as Reasonably Achievable (ALARA) will also form an integral part of decision making. The GRA is a particularly relevant document at this time.

Waste Identification, Treatment and Packaging

3.03.08 Further work is needed to define the waste to be managed in the long-term in terms of radionuclides and type (for example, graphite, metal etc) as well as by volume. This will lead to an exploration of the scope for treatment to reduce the volume of the waste, to help reduce the scale and therefore potentially the effects of facilities. Ongoing and future research on treatment options will need to be reviewed as a part of the development of the IS, as will the options for packaging, including packaging for transport.

Location, Design and Construction of Treatment or Storage or Disposal Facilities

3.03.09 The IS should systematically and transparently explore spatial options and consider the types of facilities required in relation to the waste. Where feasible and to maximise the positive environmental effects of the IS, opportunities for the reuse of brownfield, derelict or contaminated land should be prioritised.

3.03.10 Where all other considerations are equal, the Proximity Principle should be applied to define the location of facilities in order to minimise potential risk and reduce any potential environmental impacts. This should not outweigh other considerations including safety, technical feasibility of specific locations and ability of communities and

environments to accommodate developments without experiencing significant negative effects.

3.03.11 Consideration of transport optimisation will take into account any movement of the waste required for treatment, possibility of waste movements between sites, and movement required for emplacement of the waste within any future facility.

3.03.12 The design of treatment or storage or disposal facilities will need to identify clearly how monitoring will be undertaken. Similarly they will need to clearly demonstrate how waste packages and waste can be retrieved from storage or disposal facilities.

3.03.13 Good practice will be used during any construction, to avoid or minimise impacts on population and human health, soil, water, air and biodiversity. The IS will begin to explore the scope for this in order to establish the extent to which mitigation will be available for effects arising at a project level. This process will be taken forward in more detail at the Stage 3 project level and finalised through an Environmental Impact Assessment (EIA).

Social and Economic Costs and Benefits

3.03.14 A fuller social and economic assessment of the options will be required, in addition to a SEA of the IS. The Scottish Government, through its Project Board, will give further consideration to how this is best achieved, either through a distinct workstream, or amalgamated into a comprehensive sustainability appraisal as part of the SEA.

3.03.15 Close liaison with communities who could be affected by any facilities or the transportation of waste will be required at all subsequent stages in the planning and development process and into the long-term as management responsibility passes to future generations. Intergenerational equity will be a key issue in this area.

Best Practice and Experience in the UK and Internationally

3.03.16 The Policy Statement and PAS have taken account of experience elsewhere, notably the Scottish Government's direct

involvement in the Organisation for Economic Cooperation and Development work on retrievability and stakeholder engagement for the long-term management of radioactive waste. This will continue into the next stages of the IS where further work will be undertaken to establish and make use of international experiences in planning and developing near-surface facilities. These international examples are also at different stages of development and there will be an ongoing need to maintain up to date information on them and to learn from the experience of those involved in the programmes.

3.04 Summary

3.04.01 There will be an Implementation Strategy (IS) which will be subject to a Strategic Environmental Assessment (SEA). The IS and SEA will be led by the Scottish Government and will based on a stepwise approach engaging with stakeholders in the development of the Strategy and the SEA. The process will be undertaken on a project management basis.

3.04.02 The content of the Strategy and SEA will be informed by the Policy Statement and the Post-Adoption Strategic Environmental Assessment Statement as outlined in Section 3 of this document.

3.04.03 The draft IS and its SEA will be subject to public consultation.

References and Links

The references below are specific to this document. Further information and links on radioactive waste can be found in separate reference documents (Ref 9).

1. Scotland's Higher Activity Radioactive Waste Policy: 14 January 2010
   http://www.scotland.gov.uk/Publications/2010/01/14151207/0

2. Scotland's Higher Activity Radioactive Waste Policy Environmental Report: 14 January 2010
   http://www.scotland.gov.uk/Publications/2010/01/14151255/11

3. Scotland's Higher Activity Radioactive Waste Policy Supplementary Information Report: 14 January 2010
   http://www.scotland.gov.uk/Publications/2010/01/14151345/0

4. Scotland's Higher Activity Radioactive Waste Policy – Annex to the Environmental Report: Supplementary Assessment of Policy Alternatives: 09 September 2010
   http://www.scotland.gov.uk/Publications/2010/09/09094844

5. Near-surface Disposal Facilities on Land for Solid Radioactive Wastes – Guidance on Requirements for Authorisation: February 2009
   http://www.sepa.org.uk/radioactive_substances/radioactive_waste/nearsurface_disposal.aspx

6. Committee on Radioactive Waste Management, "Managing our Radioactive Waste Safely, CoRWM's recommendations to Government". July 2006
   http://corwm.decc.gov.uk/assets/corwm/post-nov%2007%20doc%20store/documents/reports%20to%20government/nov%20and%20dec%202007/700%20-%20corwm%20july%202006%20recommendations%20to%20government.pdf

7. Scotland's Higher Activity Radioactive Waste Policy Summary of Comments and Scottish Government Response 2011

January 2011
http://www.scotland.gov.uk/hawresponse

8. Scotland's Higher Activity Radioactive Waste Policy Post-Adoption Strategic Environmental Assessment Statement January 2011
http://www.scotland.gov.uk/hawpostadoption

9. Scotland's Higher Activity Radioactive Waste Policy documents: January 2011
   - Radiation and Radioactivity
   - Higher Activity Radioactive Waste in Scotland
   - Legislative and Regulatory Framework for the Management of Radioactive Waste
   - Treatment Options for Radioactive Waste
   - International Examples of Near-surface Facilities
   - Retrievability and Reversibility
   - Glossary of Terms http://www.scotland.gov.uk/hawsupplementary

10.Waste Hierarchy
http://www.sepa.org.uk/waste/moving_towards_zero_waste/waste_hierarchy.aspx

11. Waste Framework Directive (75/442/EEC) 15 July 1975 http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:1975L0442:20031120:EN:PDF

12. Revised Waste Framework Directive (2008/98/EC): 19 November 2008
http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:312:0003:0030:en:PDF

13. Radioactive Substances Act 1993: May 1993
http://www.legislation.gov.uk/ukpga/1993/12/contents

14. Policy for the Long Term Management of Solid Low Level Radioactive Waste in the United Kingdom: March 2007:
http://www.scotland.gov.uk/Topics/Environment/Waste/16293/176481

Abbreviations

The abbreviations below are specific to this document. Further information and links on radioactive waste can be found in separate reference documents (Ref 9).

ALARA	As Low As Reasonably Achievable
ALARP	As Low As Reasonably Practicable
BAT	Best Available Technology
BPEO	Best Practicable Environmental Options
BPM	Best Practicable Means
CoRWM	Committee on Radioactive Waste Management
DSP	Detailed Statement of Policy
EIA	Environmental Impact Assessment
ER	Environmental Report
EU	European Union
GRA	"Near-surface Disposal Facilities on Land for Solid Radioactive Wastes - Guidance on Requirements for Authorisation - February 2009"
HLW	High Level Radioactive Waste
ILW	Intermediate Level Radioactive Waste
IS	Implementation Strategy
LLW	Low Level Radioactive Waste
NDA	Nuclear Decommissioning Authority
OECD	Organisation for Economic Cooperation and Development
PAS	Post-Adoption Strategic Environmental Assessment Statement
RSA93	Radioactive Substances Act 1993
SEA	Strategic Environmental Assessment
SI	Supplementary Information
SSG	Site Stakeholder Groups

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This document is also available on the Scottish Government website:
www.scotland.gov.uk

Further information is available from:
The Scottish Government
Environmental Quality Division
Radioactive Waste Team
1-H Dockside
Victoria Quay
Edinburgh EH6 6QQ

Telephone and email enquiries
0131 244 0199 radioactivewasteteam@scotland.gsi.gov.uk

APS Group Scotland DPPAS11098 (01/11)

www.scotland.gov.uk

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Appendix 2 The UK Government's working with communities policy for implementing geological disposal

Introduction

1 Finding a suitable location for a GDF is a process that will take many years. The Government's preferred approach is to find a community that is willing to host a GDF. The Government has put in place a policy framework to work in partnership with communities to build trust and understanding of the development before any commitment from them is required.

2 This appendix describes the siting process for Radioactive Waste Management Ltd (RWM)[103] to work in partnership with communities and the principal local authorities that represent those communities – i.e. district councils, county councils and unitary authorities. It recognises that a successful consent-based process needs a willing community with relevant principal local authority support. The process itself must be open, transparent, as flexible as possible and democratically accountable.

3 Principal local authorities have a range of responsibilities including economic planning, infrastructure development and provision of services that would potentially be affected by the development of a GDF. The extent of their responsibilities varies depending on the administrative arrangements in place in the area. In areas where there are two tiers of principal local authorities there may be some overlap. The policy recognises this and seeks to ensure principal local authority participation whilst maintaining a degree of flexibility to take account of the different administrative structures and the different communities across the country.

4 Discussions about a proposed location for a GDF can be initiated by anyone or any group of people with an interest in the siting process, and who wish to propose an area for consideration. The interested party may suggest an area of any size; it could be as large as a county, or it could be a small area of a few fields.

[103] RWM is part of Nuclear Waste Services. Nuclear Waste Services is a division of the Nuclear Decommissioning Authority (NDA) group, and brings together the expertise of site operator LLWR, which manages the low level waste site in Cumbria and associated operations, and RWM which is responsible for delivering the Geological Disposal Facility (GDF) Programme, as well as the NDA's Integrated Waste Management Programme (IWMP)

5 Once RWM and the interested party have had an initial exchange of information and agree that the proposal merits further consideration, they must jointly inform all relevant principal local authorities and open up discussions more widely in the community. Increasingly detailed investigations will be carried out by RWM over a number of years. If there appears to be sufficient promise and there is continuing interest from within the community then deep investigative boreholes will need to be drilled to carry out further testing of the geological conditions at depth.

6 Detailed site investigations may take up to 15 years depending on the investigations necessary to understand the geology in an area and be confident that a facility can be designed to safely and securely isolate and contain the radioactive waste. When RWM has sufficient information to satisfy itself that a GDF is viable and the community has indicated it is willing to host it, RWM will need to obtain development consent to build the GDF. A GDF will also require an environmental permit from the Environment Agency and a nuclear site licence from the Office for Nuclear Regulation. The figure below illustrates the consent-based process for working with communities. The regulation of a GDF is discussed in more detail in the next section of this appendix.

Figure 11. Process for working with communities

7 The UK Government expects that it will take around 10 years to construct the first vaults within a facility. Alongside construction, there are likely to be continued underground investigations and testing of the geology to make sure that a GDF meets the necessary high standards of safety, security and environmental protection. Once the first vaults have been built, construction of the facility and the disposal of the waste will continue in parallel; with new tunnels and vaults being built as existing tunnels and vaults are filled.

8 For reasons of simplicity, this appendix refers in some places to the actions of RWM in progressing through various milestones associated with identifying a suitable location for a GDF. In some cases, the decision to proceed with that action will require approval

from the Secretary of State, specifically the decision on selecting which communities to progress to deep borehole investigation and the final site selection.

9 This appendix sets out a framework that is based on an approach of working in partnership with willing communities. As has been the case since 2008, the Government continues to reserve the right to explore other approaches in the event that, at some point in the future, such an approach does not look likely to work.

Initial discussions

10 Identifying a willing host community with a suitable site for a GDF may be a lengthy process. This is because it will take RWM time to identify, investigate and evaluate potential sites and to make sure that communities that choose to get involved understand the implications of a GDF being developed in their area. The intention is that RWM, as the delivery body, will work in partnership with communities to provide answers to their questions, so the community can make an informed decision about whether to support a facility being developed in their area.

11 The process starts with initial discussions between an interested party and RWM. Initial discussions can be initiated by anyone with a proposal for an area to be considered for a GDF. Examples include local authorities, landowners, businesses, community groups or interested individuals. RWM may also proactively encourage interested parties and local communities to come forward and engage.

12 An interested party could come forward without any specific land in mind but a general ambition to find out if there is potential to develop a GDF within their area. Alternatively, interested parties could come forward with a particular site in mind.

13 It is possible that an interested party may suggest a location for a GDF beneath the UK's territorial waters, with the surface facilities being located on land, which could be a feasible option. Government owned land may also be put forward.

14 Where a third party puts forward a potential site that it does not own, the third party and RWM should consider at what point it would be appropriate to include the landowner(s) in discussions.

15 Under all scenarios RWM will undertake initial work to understand whether the land identified has any potential to host a GDF. At this point discussions may remain confidential (subject to disclosure requirements contained in information law legislation, including the Freedom of Information Act 2000 and the Environmental Information Regulations 2004), though they should be made public at the earliest opportunity if the interested party and RWM decide to move forward.

16 It may be that RWM decides after its initial work that there is little or no potential to host a GDF in the area under consideration. Equally, the interested party may, after finding

out more from RWM, decide that it is no longer interested. In either scenario the process would end for that area. If, however, both RWM and the interested party want to progress they must inform all relevant principal local authorities before going public with the proposals and starting a dialogue with the people in the local area.

Forming a Working Group and identifying a Search Area

17 In order to begin a conversation with the people in the area, the interested party, RWM, an independent chair and an independent facilitator will form a Working Group. All relevant principal local authorities that represent the people in all or part of the area under consideration must be invited to join the Working Group.

18 This early part of the process is essentially about fact finding, gathering information about the community and providing information to the community about geological disposal. At this stage, it is important to ensure a community has the ability to have fact-finding and exploratory discussions with RWM without having to wait for a principal local authority to join the Working Group. Therefore, relevant principal local authority membership on the Working Group is not a requirement, although it would be preferable to have at least one relevant principal local authority as a member, given their invaluable knowledge and experience of the local area and people.

19 Relevant principal local authorities will receive financial support from the UK Government to participate throughout the process including as a member of the Working Group, so that local taxpayers do not incur any additional financial burden. Funding will also be provided to support the Working Group's activities, and will be available to cover reasonable out-of-pocket expenses for individuals taking part in the Working Group (e.g. travel costs for attending meetings). RWM will provide clear advice and guidance on activities where expenses can be covered and how costs will be reimbursed.

20 The Working Group may want to consider whether it would be beneficial to invite representation from a Local Enterprise Partnership and parish and town councils. Given the potentially large number of parish or town councils in any given area, it may not be feasible for them all to join. It may instead be possible for them to collectively agree to send a representative to join the Working Group.

Defining the Search Area

21 An early task for the Working Group is to identify a Search Area. The Search Area is the geographical area within which RWM seeks to identify potentially suitable sites to host a GDF. Defining the boundaries of the Search Area is important in order to identify appropriate membership for the Community Partnership, including relevant principal local authorities, and to determine eligibility for Community Investment Funding.

Projects, schemes and initiatives within the Search Area may be eligible for this funding. The Community Partnership and Community Investment Funding are discussed in paragraphs 28 to 47 and paragraphs 67 to 80 respectively.

22 The Search Area is derived from the area first put forward for consideration by the interested party and is defined using district or unitary council electoral ward boundaries, depending on the administrative arrangements in place for the particular area. The Search Area, therefore, encompasses all the electoral wards within which RWM is able to consider potential sites. For areas which include potential for development under the seabed, the Search Area comprises only that area on land.

23 The geographical boundaries of the Search Area are likely to change as the search for a potential location for the surface and underground facilities progresses and more is understood about the area. The Search Area will be refined over time by the Community Partnership (the Community Partnership is discussed in more detail in paragraphs 28 to 47). As RWM's investigations progress the Community Partnership may identify areas that it wants to rule out of consideration or bring in additional areas that it did not at first consider to be part of the Search Area. Any future changes to electoral ward boundaries should be reflected in the Search Area as it evolves over time.

24 Eventually the Search Area will be narrowed down until the Community Partnership identifies a specific site and the community which will be directly affected by the facility being on that site. This is referred to as the Potential Host Community. More detail on the Potential Host Community, including how its boundaries would be determined, is set out in paragraphs 86 to 90.

The role of the Working Group

25 As it identifies the Search Area, the Working Group will start work to understand the local area and any issues or questions the community within it might have. Funding will be provided for independent support and a facilitator to support the Working Group. The independent facilitator will be a member of the Working Group and will help to bring together different views so that discussions progress in a constructive and informative manner. RWM will provide guidance on the support that will be available to the Working Group.

26 The Working Group will work to identify members of the community who may be interested in joining a Community Partnership. This work will include:

- gathering information about the different people and organisations in the area who will have an interest or who are likely to be affected;
- gathering information to understand the existing geographic, social, economic, environmental, cultural and administrative structures of the Search Area;

- understanding the community's issues, concerns and questions about geological disposal and the process for identifying potential locations for a GDF;
- engaging with relevant principal local authorities within the Search Area (if they have not joined the Working Group).

27 RWM will use independent evaluation to review the practical effectiveness of this part of the process to help improve future engagement. Table 1 sets out the membership of the Working Group.

Table 1 Membership of Working Group

Member	Role
Independent Chair	The Chair will ensure that meetings and discussions are run appropriately. Someone to fulfil this role could be procured from an approved list of contractors on behalf of the interested party, or there may be existing community organisational structures in the local area that could be used.
Independent Facilitator	The independent facilitator will aim to ensure that discussions progress in a constructive and informative manner. The facilitator can assist in asking relevant questions and directing conversations to cover the points of interest from the interested parties and other members of the community.
Interested Party	This is the group, organisation, or individual(s) who first started discussions with RWM.
RWM	The delivery body who are engaging with the community – providing information to the community and promoting the benefits of a GDF.
Relevant Principal Local Authorities (optional)	Relevant principal local authorities are the district, county and unitary authorities that represent the people in all or part of the area under consideration. It may be that the Local

Authority is the interested party. If not, they must be informed of discussions and invited to join the Working Group.

The Community Partnership

28 A Community Partnership can only be formed and continue to operate if one or more relevant principal local authorities in the Search Area agree to participate. There must be at least one relevant principal local authority representing each district or unitary authority electoral ward in the Search Area. In an area with two tiers of local government (i.e. district and county) in order to maintain flexibility, it is not a requirement that both join. It may be, where two tiers of local government exist, that one of the relevant principal local authorities is content for a Community Partnership to continue its work without it being a member. Where a relevant principal local authority decides not to be a member, the Community Partnership should keep it informed of its work. Any relevant principal local authority that does not initially join the Community Partnership may decide to join at any point in the future.

29 All of the Search Area must be represented by a relevant principal local authority on the Community Partnership. If a relevant principal local authority decides to leave the Community Partnership with the result that part of the Search Area (or, once identified, the Potential Host Community) is no longer represented by any of the relevant principal local authorities on the Community Partnership, then it will no longer form part of the Search Area (or Potential Host Community). The figure below summarises the role of relevant principal local authorities in the process.

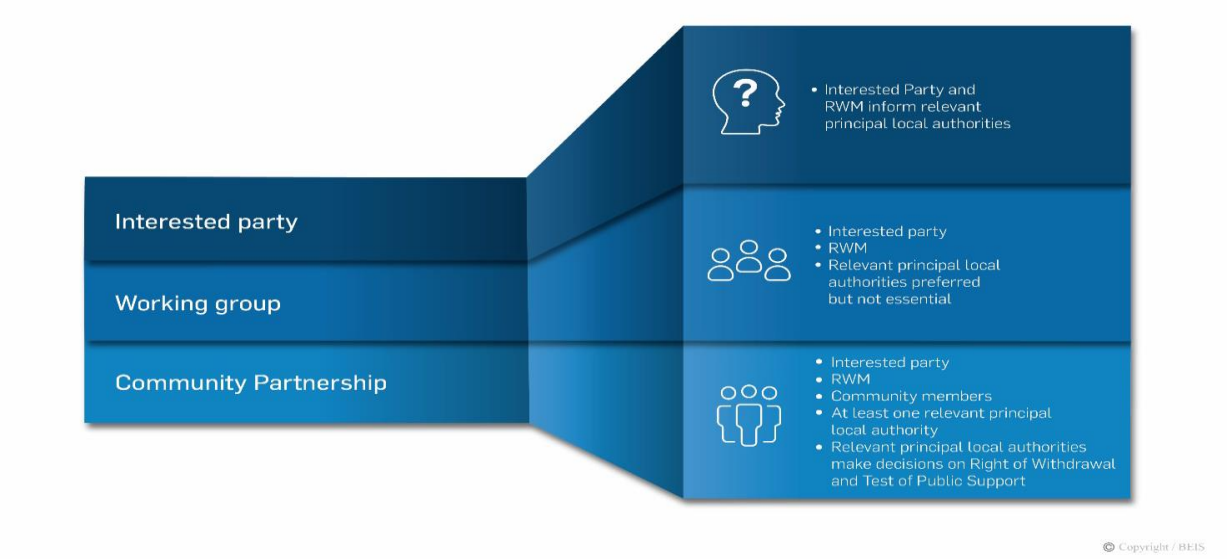

Figure 12. Role of principal local authorities

The role of the Community Partnership

30 The role of the Community Partnership is to:

- facilitate discussion with the community;
- identify relevant information that people in the Search Area and Potential Host Community want or need about the siting process;
- be the key vehicle for community dialogue with RWM;
- review and refine the boundaries of the Search Area as RWM's investigations progress;
- identify priorities for Community Investment Funding;
- make recommendations to the relevant principal local authorities on the Community Partnership on whether to invoke the Right of Withdrawal and if and when to launch a Test of Public Support;
- agree a programme of activities to develop the community's understanding of the siting process and the potential implications of hosting a GDF;
- develop a community vision and consider the part a GDF may play in that vision;
- monitor public opinion in relation to siting a GDF within the Search Area and the Potential Host Community.

31 There will be a lot of information to share between the community, RWM and other parties (e.g. the Environment Agency and the Office for Nuclear Regulation) over a long period of time. The Community Partnership provides a vehicle for sharing that information and to find answers to the questions the community may have about geological disposal and its impacts, the siting process and how the community could benefit.

32 Sub groups could be set up to consider some of the issues set out above, for example on communication and engagement, in which people from the community could get involved. We would expect that members of sub-groups would normally be appointed through an open process; however, from time to time the Community Partnership may want to co-opt members with particular expertise.

33 When identifying prospective members of the Community Partnership, the Working Group needs to consider the types of skills, knowledge and experience that the Community Partnership will need. It may invite particular organisations to join, as well as inviting applications through an open process. It should aim for membership that is reflective of the community in the Search Area. Prospective members of the Community Partnership will be identified by a selection panel of Working Group members. The selection panel must include the independent chair, RWM and any relevant principal local authority on the Working Group. The process for selecting members must be open and transparent. Prospective members will be appointed onto the Community

Partnership upon signing the Community Partnership Agreement (see paragraphs 48 to 50).

34 The Community Partnership will be formed of representatives from community groups, organisations and individuals, at least one relevant principal local authority and RWM. It is appropriate to invite representation from organisations that have responsibility for managing or regulating large areas of land such as National Park Authorities, the National Trust, or the Forestry Commission, should the Search Area include land for which they are responsible.

35 The Community Partnership should seek to include representation from parish and town councils. Given the potentially large number of parish or town councils in any given area, it may not be feasible for them all to be members of the Community Partnership. It may be possible for the parish or town councils to collectively put forward a representative for membership of the Community Partnership. Once the Potential Host Community is identified, there may be scope for individual parish or town councils to be on the Community Partnership.

36 It may also be appropriate to invite representatives of combined authority areas (where relevant) and Local Enterprise Partnerships. Members representing organisations will be responsible for sharing all information discussed and developed through the Community Partnership with the rest of their organisation.

37 It will be for each Community Partnership to decide on its number of members and to appoint a chair. However, in order to function effectively we would suggest it should be around 12 people.

38 RWM has a key role to play in the Community Partnership as a source of information and expertise on geological disposal and as the developer working together in partnership with the community. RWM will help the community access information from a range of resources, from its own technical and scientific teams, or from independent parties who can help to answer questions.

Decision making within the Community Partnership

39 Principal local authorities play a crucial role in respect of planning, infrastructure development and service provision. For this reason, and to ensure democratic accountability, the relevant principal local authorities on the Community Partnership will take two key types of decisions. They will have the final say on:

- whether to seek to withdraw the community from the siting process (through invoking the Right of Withdrawal);
- if or when to seek the community's views on whether it wishes to host a GDF (i.e. proceed to a Test of Public Support).

40 Although the relevant principal local authorities will have the final say in relation to these two key decisions, they should involve other members of the Community Partnership in discussions on whether they intend to seek to withdraw the community from the process and the appropriate time to launch a Test of Public Support. Equally, the other members of the Community Partnership should be able to make recommendations to the relevant principal local authorities on the Community Partnership on invoking the Right of Withdrawal and the timing of the Test of Public Support.

41 All relevant principal local authorities on the Community Partnership must agree before the Right of Withdrawal can be invoked or the Test of Public Support can take place. For example, in an area with two tiers of local government and where both relevant principal local authorities are on the Community Partnership then they must both agree to invoke the Right of Withdrawal and to carry out the Test of Public Support. It would not be appropriate for principal local authorities to take these decisions without being members of the Community Partnership and fully engaged in the process. They must be a member of the Community Partnership in order to have a say.

42 The relevant principal local authorities can either take the decision to withdraw the community from the process themselves or do so after seeking the community's views. If the relevant principal local authorities agree that the decision to withdraw the community from the process should involve the community directly, then the method for seeking the community's view on possible withdrawal from the process will be considered by the Community Partnership as a whole. The Community Partnership's view on what mechanism could be used for this should be set out in the Community Partnership Agreement, which can be updated as views on this develop over time.

43 The relevant principal local authorities must, however, seek a final view from the community, through a Test of Public Support, on whether it is willing to host a GDF before RWM seeks the necessary regulatory approvals and development consent for the construction and operation of a GDF. The Test of Public Support can only take place if all relevant principal local authorities on the Community Partnership agree to it being held.

44 If the relevant principal local authorities agree that it is an appropriate time to seek the community's view on whether or not it wishes to host a GDF then the method for taking that Test of Public Support will be decided by the Community Partnership as a whole. The Community Partnership's view on what mechanisms could be used for this should be set out in the Community Partnership Agreement, which can be updated as views on this develop over time. The Community Partnership Agreement is discussed in more detail in paragraphs 48 to 50.

45 In the event that the relevant principal local authorities do not agree on whether to invoke the Right of Withdrawal or move to the Test of Public Support, RWM could fund independent mediation to ensure concerns are heard, understood and attempts are

made to address them. The Right of Withdrawal and the Test of Public Support are discussed in more detail in paragraphs 91 to 97 and paragraphs 98 to 106 respectively.

46 All other decisions, such as priorities for the Community Investment Funding, or agreeing the programme of activities, should be taken by the Community Partnership. It will be for the Community Partnership to decide how it takes these decisions, for instance whether unanimity is required, or a simple majority and what constitutes a quorum, or whether a decision is delegated to a sub-group. This should be set out in the Community Partnership Agreement.

47 At times it may be appropriate for the UK Government to hold direct discussions with the relevant principal local authorities on the Community Partnership. Table 2 sets out the membership of the Community Partnership.

Table 2 Membership of the Community Partnership

Member	Role
Community Members	Organisations and individuals that reflect the make-up of the community.
Relevant Principal Local Authorities	Relevant principal local authorities are the district, county and unitary authorities that represent all or part of the area under consideration. At this point they will be the principal local authorities that represent people in the Search Area (and Potential Host Community when it is identified). In order for the Community Partnership to form and continue to operate at least one relevant principal local authority must join. Relevant principal local authorities on the Community Partnership will take two key types of decisions. They will have the final say on whether to seek to withdraw the community from the siting process and if or when to seek the community's views on whether it wishes to host a GDF.

RWM	A key member of the partnership as the delivery body of a GDF. They will provide information as required by the Community Partnership and provide updates on their investigations into the feasibility of the area to host the facility. RWM will explain the concept of a GDF and its benefits. They will be responsible for all technical decisions.
Chair	At the beginning this could be the same chair as was used during Working Group discussions, or a new chair could be appointed. They will ensure that the work of the Community Partnership is fair, unbiased and reflects the needs of the community.

The Community Partnership Agreement

48 The prospective members of the Community Partnership will develop and sign a Community Partnership Agreement. Once the Community Partnership Agreement is in place Community Investment Funding can be made available. (Community Investment Funding is discussed further in paragraphs 68 to 81).

49 The Community Partnership Agreement will set out the principles of how the members of the Community Partnership will work together and their roles and responsibilities. It should include terms of reference to clarify how the Community Partnership operates, how it will take decisions, settle disputes and an outline programme of activities. RWM will provide a template Community Partnership Agreement and further guidance.

50 In the first instance, the Community Partnership Agreement will cover the period immediately following the establishment of the Community Partnership. As the siting process progresses, the Community Partnership Agreement may evolve and will be subject to review, for example to reflect any change in geographical scope of the Search Area and therefore membership.

Community engagement activities

51 The Community Partnership will need to engage with the community over a long period of time. Getting people actively involved on any issue can be challenging and it is possible that vocal minorities can dominate debate. It will therefore be important to open up community participation through a wide number of channels.

52 One way of doing this could be to hold open public meetings of a Community Stakeholder Forum inviting people from the Search Area and neighbouring local

authority areas. The Forum could meet at regular intervals, and could also exist online, giving the Community Partnership the opportunity to report on activities it has undertaken and the outcome of those activities. It would give members of the community the opportunity to raise questions and issues that they want addressed, which could then be fed into the programme of activities. It will be important that all interactions between the Community Partnership and people in the community are made public.

53 The Community Partnership could also consider engagement through social media, dedicated outreach work with particular groups (for example engagement with young people through schools and colleges) and using existing networks to reach out to people. It will be important to consider how to address diversity and accessibility issues so that people within the Search Area or Potential Host Community are not excluded from participating.

Communicating the inventory for disposal

54 An important issue that will need to be communicated to the community will be the inventory for disposal. As set out in chapter 8, paragraph 8.81 the inventory for disposal comprises a number of categories of waste and material. It is not anticipated that those categories of waste and material will change significantly. If, however, the list of waste and materials were to change significantly it would need to be discussed with the Potential Host Community. A process for agreeing any future material changes to the categories of waste to be disposed of in a GDF would need to be agreed before the Test of Public Support.

55 In April 2022 the UK Government set out an ambition in its British Energy Security Strategy[104] to increase its plans for deployment of nuclear power to up to 24 gigawatts through large-scale nuclear power stations, small modular reactors (SMRs) and advanced modular reactors (AMRs).

56 The waste from a new build programme of large-scale nuclear power stations and SMRs, comprising spent fuel (yet to be declared waste) and ILW not suitable for disposal in near surface facilities will be disposed of in a GDF. Waste from any future AMRs will also be disposed of in a GDF if it is suitable to do so. It would need to undergo an Assessment of Disposability by RWM in support of the regulatory and permitting processes of the ONR and relevant environment agency before a final decision can be taken on whether it will be disposed of in a GDF.

57 The UK Government recognises that communities considering hosting a GDF will want to have as clear as possible an understanding of the inventory for disposal before they take a Test of Public Support. This information will also be needed by RWM for its

[104] British Energy Security Strategy. Available at: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy

application for a development consent order for a GDF. Changes in the UK Radioactive Waste Inventory (UKRWI), and hence the Inventory for Geological Disposal, will occur as UK nuclear sites evolve and the decommissioning programme matures. For planning purposes, however, RWM will factor the waste from the new nuclear ambition of up to 24 gigawatts into their planning for a GDF as the siting process progresses.

58 The estimated quantity and the types of waste to be consigned to a GDF needs to be visible. Regular published updates to the inventory will ensure transparency. UKRWI updates are currently published every 3 years. To support the implementation of geological disposal RWM also publishes a quantified description of the Inventory for Geological Disposal every 3 years. In future this will continue to include updated estimates of waste arising from new nuclear build, based on the realistic pipeline of development at the time. The most recent report was published in 2021, together with the methodologies and assumptions that were used in its development.[105] The UK and Welsh Governments are committed to providing as much clarity as possible as the position evolves.

Funding to support the activities of the Community Partnership

59 Engagement Funding will be provided throughout the siting process. It is intended to support the activities of the Working Group and the Community Partnership.

60 Engagement Funding is intended to cover the costs of the Community Partnership's engagement activities, information gathering, and support services that may be required. It will be used to cover the administrative costs associated with the operation of the Community Partnership and disbursement of community investment funding. It will also provide for independent facilitators to work with the Community Partnership and Stakeholder Forum to provide constructive guidance and challenge to make sure all voices are heard and to help reconcile different views where possible.

61 The types of engagement and information gathering activities by the Community Partnership provided through engagement funding could include:

- activities through which communities learn about geological disposal;
- commissioning of reports on specific issues;
- accessing independent scientific and technical advice;
- communications activity, such as a stakeholder forum, websites, information leaflets, social media and outreach and information events.

62 Engagement Funding will also be available to cover reasonable out-of-pocket expenses for individuals taking part in the work of the Community Partnership (e.g. travel costs for

[105] Radioactive Waste Management Ltd (RWM) (2021). 2019 Inventory for Geological Disposal. Available at: https://www.gov.uk/government/publications/2019-inventory-for-geological-disposal

attending meetings). RWM will provide clear advice and guidance on activities where expenses can be covered and how costs will be reimbursed.

Access to scientific and technical information

63 It is vital that communities have confidence in the information provided to them about the siting process, including on all relevant scientific and technical issues. RWM will be the first port of call for information on geological disposal and the siting process. The Community Partnership will also be able to call on the advisory body, CoRWM and regulators.

64 The Community Partnership may also commission reports and research on specific topics from independent experts, as part of the agreed programme of activities. Given the range of advice and information available it may be that the Community Partnership receives conflicting statements from different parties. If that is the case the UK Government is making available a mechanism through which the Community Partnership can access independent experts for views on contested and unresolved scientific or technical issues.

65 The UK Government has signed a Memorandum of Understanding with a number of Learned Societies, who have agreed a mechanism under which the Community Partnership may approach their members for a view on any scientific or technical questions it may have remaining after discussing them with RWM, the regulators and any research and reports that they may have had commissioned. It is not envisaged that this mechanism will be used on a regular basis. It would be used only where there are contested and unresolved scientific or technical issues that have arisen through the community engagement and one of the parties feels that a further view from a relevant Learned Society member may be helpful in addition to all of the existing information provided by RWM. The mechanism can also be used by RWM.

66 The Memorandum of Understanding has been signed by: BEIS; the Welsh Government; RWM; the Geological Society of London; the Institute of Environmental Management and Assessment; and the Learned Society of Wales. When called upon a committee will be formed of these Learned Societies for them to identify the appropriate Learned Society (depending on the subject matter) to provide a view. This may be an individual or collective view from a group of people. Where the question falls outside the expertise of the Committee, it may approach a Learned Society which has not signed the Memorandum of Understanding.

Funding for the community in the Search Area and the Potential Host Community

67 In addition to the engagement funding explained in paragraphs 59 to 62, there will be Community Investment Funding for the community in the Search Area and the Potential Host Community, and significant additional investment for the community that eventually hosts a GDF.

Community Investment Funding

68 A GDF is a multi-billion pound infrastructure investment and is likely to have a positive effect on the local economy. It is estimated that a GDF will provide jobs and benefits to the economy for more than 100 years. Current estimates are it will directly employ around 600 skilled, well-paid staff per year, over the duration of the project, with workforce numbers rising to more than 1,000 during construction and early operations.

69 A GDF is also likely to involve major investments in local transport facilities and other infrastructure and create secondary benefits within industry, local education resources and local service industries. However, these benefits will not materialise for a number of years. The Government is therefore making available Community Investment Funding to those communities that form Community Partnerships and participate in the process.

70 The funding will be available once the Community Partnership is formed and a Community Partnership Agreement has been signed. It will continue for as long as the community remains in the siting process and continues to demonstrate engagement through a programme of activities.

71 During the early parts of the siting process, the UK Government has committed to make available Community Investment Funding of up to £1 million annually per community. This will rise to up to £2.5 million annually per community where deep borehole investigations take place to assess the geological suitability of a site. Initially there may be several communities interested in participating in the process and these will go through a down selection process to a smaller number of communities that will progress to deep borehole investigation. The Community Investment Funding is provided in addition to the Engagement Funding described above in paragraphs 59 to 62.

72 Community Investment Funding must be spent in accordance with best practice in delivering value for money as set out in Managing Public Money[106] and in accordance with other legal requirements.

73 The funding can be used to pay for projects, schemes or initiatives that:

[106] Managing public money: https://www.gov.uk/government/publications/managing-public-money

- improve community well-being, for example improvements to community facilities, enhancement of the quality of life or health and well-being of the community;
- enhance the natural and built environment including cultural and natural heritage, especially where economic benefits, for example through tourism, can be demonstrated; or
- provide economic development opportunities, for example employment opportunities, job creation, skills development, education or training, promotion of local enterprise, long-term economic development or economic diversification.

74 The Community Partnership will need to consider these principles along with any local economic vision and socio-economic strategies or plans in order to develop locally specific funding criteria. They may wish to consider funding initiatives that could help them derive greater benefit from hosting a GDF. The Community Investment Funding must not be used to fill shortfalls in local authority budgets.

How will Community Investment Funding be administered?

75 It is the Government's preference that the Community Investment Funding should be administered by a third party. This is intended to provide additional transparency and independence from RWM, as the conduit of the funding. The third party that administers the funding must have a legal personality (be a legal 'entity') as it will need to enter into an agreement or agreements with RWM, employ staff to support applicants for funding and enter into agreements to release funding for projects.

76 An appropriate existing community or public body could be used to administer the funds if the Community Partnership wishes, provided it has the necessary skills and resources, legal personality and the appointment is compliant with all relevant procurement rules.

How will the community access the Community Investment Funding?

77 Community Investment Funding is available for projects, schemes and initiatives within the Search Area and the Potential Host Community when it is identified. Once the Potential Host Community is identified the Community Partnership may decide to prioritise applications within the boundaries of the Potential Host Community.

78 The funding is accessed through an open and transparent application process. Applicants will have to set out what they would like the funding for, how it will benefit the community and how it meets any locally agreed criteria. Applications will be submitted to the funding administrator. A Community Investment Panel reviews recommendations made by the funding administrator and decides on applications for funding against the principles set out in paragraph 73 and any additional criteria the Community Partnership has decided to apply.

79 The Community Investment Panel will be made up of RWM and other members of the Community Partnership. The Community Partnership may choose to appoint members to the Community Investment Panel through an open process. The funding administrator will provide advice and support to help members of the community apply for funding.

80 The funding is available on an annual basis. However, it will still be possible for communities to benefit from projects, schemes, or initiatives that may be spread over a number of years. RWM will provide further guidance on this point.

81 If either the community or RWM withdraws from the siting process, the Community Investment Funding will end in that community. Any funding that has been committed within that financial year by the Community Investment Panel will be honoured.

Significant additional investment for the host community

82 The UK Government will provide additional investment to the community that is ultimately selected to host the GDF. For the community chosen to host the GDF the significant additional investment will replace the Community Investment Funding. This additional investment will enhance the significant economic benefits that are inherent in hosting a Nationally Significant Infrastructure Project and recognise the long-term commitment from the community toward the national interest. Investment could include improved local education and skills capacity, improved transport infrastructure or improved recreational facilities. This additional investment will be significant and comparable to other international GDF projects.

83 The investment is additional to the investment and jobs that a major infrastructure project of this kind will bring to an area. It is also additional to any funding for planning obligations associated with mitigating impacts during development of a GDF, the Community Investment Funding and Engagement Funding provided during the siting process. RWM will work with the Community Partnership to identify a community vision, and what this might mean for the significant additional investment package.

Property compensation

84 The Government recognises that communities may be concerned about effects geological disposal infrastructure may have on property values in the local area. Most major infrastructure projects involve making provision for compensation for local residents and property owners who experience an impact on the value of their property as a result of construction of the new infrastructure.

85 RWM will undertake work with Community Partnerships in the siting process to assess whether there is likely to be any impact on local property prices and consider whether a

property support scheme would be appropriate. Once this assessment work is complete, a decision will be taken and an appropriate approach will be adopted for each community.

The Potential Host Community

86 The Potential Host Community is the community within a geographical area that could potentially host a GDF. It will be identified over time from within the Search Area. The boundaries of the Potential Host Community need to be defined to determine who will get a say in the Test of Public Support.

87 The Potential Host Community will be defined using district, or unitary council electoral ward boundaries, depending on the administrative arrangements in place in the area. The Potential Host Community would include all of the wards in which the following would be located:

- proposed surface and underground elements of a GDF;
- any associated development (as defined under the Planning Act 2008 in England) and any land required to mitigate impacts;
- transport links/routes from the GDF site to the nearest port, railhead or primary road network (i.e. out to where minor roads meet the nearest A roads);
- direct physical impacts associated with underground investigations, construction and operation of the GDF (identified though environmental impact assessment work carried out to support RWM's engagement with communities and its development consent applications).

88 The Potential Host Community will likely be made up of several wards. Furthermore, all the wards could be contained within one district, county, or unitary authority or could cross local authority boundaries. The geographical boundaries of the Potential Host Community will be agreed by the Community Partnership based on information gathered through the siting process and the criteria above. The boundary of the Potential Host Community will reflect any future changes to electoral ward boundaries that may occur.

89 Only residents in the area that will be directly impacted by the development should have a final say in whether they wish to host a GDF. It will be the people living in the Potential Host Community, through a Test of Public Support, that will decide whether they want to continue with the process for siting a GDF in the area. The Test of Public support is considered further in paragraphs 98 to 106.

90 If the Potential Host Community boundary is near other local authority boundaries, the Community Partnership will need to consider engaging with people within neighbouring local authorities. They would not, however, have a say in the Test of Public Support.

Right of Withdrawal

91 The community can withdraw from the siting process at any point up until a Test of Public Support is taken. The Community Partnership itself might have concerns about continuing further in the process. Or it may judge, through its monitoring of public opinion, that there is no realistic prospect of building support for a GDF within the community.

92 Where there are concerns about the siting process, the Community Partnership, including RWM should make all attempts to address these concerns before considering withdrawing from the process. In this situation RWM could fund independent mediation to ensure concerns are heard, understood and all reasonable attempts have been made to address them.

93 The decision on whether to withdraw the community will be taken by the relevant principal local authorities on the Community Partnership. In an area with two tiers of local government, and where both tiers of relevant principal local authorities are on the Community Partnership, then they must both agree to invoke the Right of Withdrawal; in these circumstances no single principal local authority will be able to unilaterally invoke the Right of Withdrawal. Separately, if a relevant principal local authority decides to leave the Community Partnership with the result that the people in part of the Search Area (or once identified, the Potential Host Community) are no longer represented by any of the relevant principal local authorities on the Community Partnership, then this area will no longer from part of the Search Area (or Potential Host Community), but the process could continue in the remaining Search Area or Potential Host Community.

94 The relevant principal local authorities may decide to seek the views of the community on whether to withdraw from the process. The UK Government considers it would be good practice to consult the community on the question of whether to withdraw.

95 If the relevant principal local authorities decide they wish to consult the community, then the decision on how they seek views would be a decision taken by the entire Community Partnership and should be set out in the Community Partnership Agreement. The method chosen to seek views could be either a local referendum, a formal consultation or statistically representative polling. If new methods of consultation emerge in the future the Community Partnership may wish to consider a different approach.

96 If the relevant principal local authorities on the Community Partnership decide to seek the views of the community on whether to withdraw from the process it would be residents of the Search Area (as set out in paragraphs 21 to 24) that would participate or the residents of the Potential Host Community (as set out in paragraphs 86 to 90) if it had been identified by the time withdrawal was being considered.

97 RWM can also choose to withdraw from the process. For example, RWM could withdraw for technical reasons or other reasons which demonstrated there were no longer prospects of finding a suitable site within either the Search Area or Potential Host Community. RWM could also withdraw in order to prioritise available funds across other communities in the siting process. RWM will be transparent in its considerations to withdraw from a community.

Test of Public Support

98 The UK Government's policy is not to impose a GDF on a community, but to seek to build community support through open and transparent engagement in a consent-based siting process. Before RWM seeks regulatory approval and development consent to begin construction of a GDF in a particular community, there must be a Test of Public Support of residents in the Potential Host Community to determine whether the community is willing to host a GDF.

99 The relevant principal local authorities on the Community Partnership will take the decision on if or when to hold a Test of Public Support. In order to move to a Test of Public Support all relevant principal local authorities on the Community Partnership must agree. Therefore, in an area with two tiers of local government and where both tiers of relevant principal local authority are on the Community Partnership then they must both agree to a Test of Public Support. As set out in paragraph 44 the Community Partnership as a whole will choose the mechanism for carrying out the Test of Public Support.

100 The Test of Public Support is designed to determine a final view from the community as to whether they are willing to host a GDF. If the result of the Test of Public Support is positive, RWM may then proceed with statutory licensing, environmental permitting and development consent application processes to build a GDF. This process is discussed further in the next section. If the result of the Test of Public Support is not positive, RWM will not be able to seek regulatory approval and development consent for a GDF and the siting process will cease in that community.

101 The Test of Public Support will be carried out in the Potential Host Community. As with the Right of Withdrawal, there are currently three main mechanisms that could be used for the Test of Public Support: a local referendum, a formal consultation or statistically representative polling. If new methods to test public opinion emerge in the future, the Community Partnership may wish to consider a different approach.

102 RWM will produce guidance which will set out in more detail how the Test of Public Support could potentially operate, but it will be for the Community Partnership to decide how it wishes to approach it. Whatever approach is adopted, it is important that the Community Partnership carries out the Test of Public Support in a way that is fair and

robust. Funding will be provided to cover the cost of carrying out the Test of Public Support.

103 The Test of Public Support would only be taken after extensive community engagement when the community has had time to ask questions, raise any concerns and learn about a GDF. There will be only one opportunity for a Test of Public Support in each Potential Host Community. However, the UK Government expects the Community Partnership to monitor public opinion throughout the process.

104 The community's Right of Withdrawal will cease following the Test of Public Support. Once it has been established that the community is willing to host a facility, and RWM, has identified a preferred site, RWM, subject to the Secretary of State's agreement, will proceed with applications for the relevant planning and regulatory consents required for the underground investigations, construction and operation of a GDF.

105 The development consent application and the applications that RWM makes for various permits and licences are likely to involve further elements of public participation. This means that members of the Community Partnership, the Potential Host Community and any other member of the public or organisations that have an interest, will have further opportunities to offer their views after a positive Test of Public Support.

106 The Working with Communities policy framework covers the process of community engagement up until the Test of Public Support. After this point the Community Partnership may then transition into a liaison group to provide an enduring interface between RWM and the local community during the development consent process, the regulatory permitting and licensing processes and through to the construction, operation and closure of the facility.

Protecting people and the environment

Finding a suitable site

107 The safety and security of a GDF is paramount. It will not be built unless RWM can demonstrate it meets the high standards of safety, security and environmental protection required by the Environment Agency and Office for Nuclear Regulation. Demonstrating that a chosen location will meet these high standards is a complex process that could take many years. That is why the UK Government has put in place this framework requiring RWM to work in partnership with communities to build trust and understanding of the development throughout this process before any commitment to host a GDF is required.

108 The process to identify and select a site for a GDF requires detailed technical work that could take around 15 to 20 years. The eventual construction and operation of the facility will then run for 100+ years. It will require geological and site suitability investigations. Then deep investigatory boreholes will need to be drilled to carry out further testing of

the geological conditions at depth. Applications will need to be made for development consent to carry out deep borehole investigations at potential sites. Alongside this, Environmental Permits will also be required for borehole investigations.

109 Detailed site investigations could take 15 years, depending on how long it takes to understand the underlying geology and be confident that a facility can be designed to safely and securely isolate and contain the waste. When RWM has gathered sufficient information to satisfy itself that a GDF is viable, and the community has indicated that it is willing to host a facility, RWM will make an application for development consent for the facility itself and any associated development (for example, transport infrastructure). A GDF will also require an Environmental Permit and a Nuclear Site Licence.

110 Depending on the local geology, it is anticipated to take around 10 years to construct the first vaults to take waste. Once operational, construction of the facility will continue in parallel with waste emplacement with new tunnels and vaults being built to receive waste as existing tunnels and vaults are filled. The figure below illustrates the process from the launch of the siting process through to the construction, waste emplacement and closure of a facility.

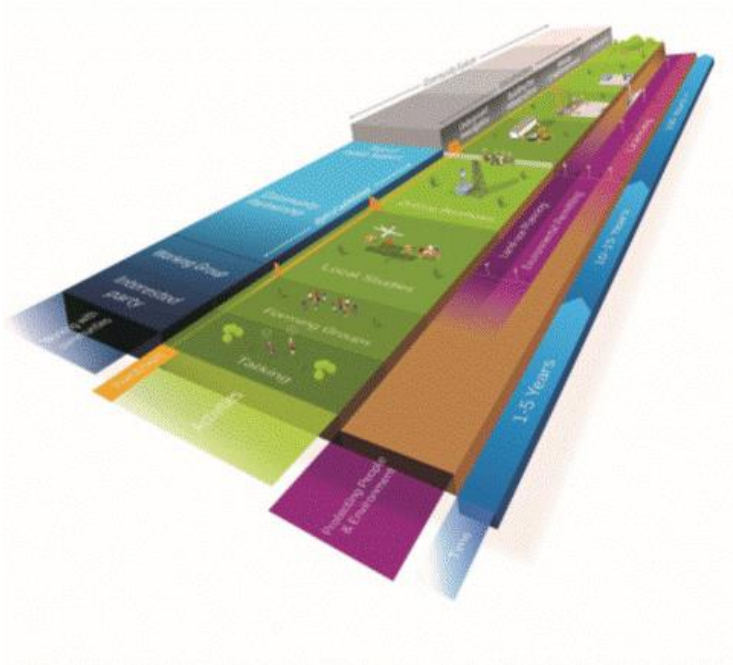

Figure 13. Process for implementing geological disposal.

Safety cases

111 RWM will be required to present safety arguments for all aspects of a proposed facility – everything from transporting waste to the facility, to its design, construction and operations, and safety in the long-term following closure. To demonstrate how a GDF meets high standards of safety, security and environmental protection throughout the lifecycle of the facility, RWM will need to develop and maintain a number of safety cases (including operational safety, environmental safety and transport) and security plans, all of which will be subject to scrutiny by the independent regulators.

112 RWM has developed a generic Disposal System Safety Case (DSSC),[107] which is a suite of documents that considers the safety and environmental implications of the geological disposal of higher activity radioactive waste. The suite of documents is designated as a 'generic' safety case: it is not site-specific as no site has yet been chosen for a GDF. It provides information on how a GDF could be designed, constructed and operated safely, in compliance with regulatory guidance, in a range of geological environments. This safety case also provides the basis for the design of packaging for waste ready for disposal in a GDF.

113 There are three main safety case reports on operational, long-term environmental and transport safety and a series of individual assessments for each of the different safety case reports. The suite of reports includes a detailed specification for the disposal system, the assumed inventory for geological disposal and a description of the illustrative designs of the transport system and the disposal facility, which are the basis of the assessments. Information is also provided on the findings from a comprehensive, ongoing research programme and learning from facilities around the world.

Long-term environmental safety case

114 The ultimate safety of any GDF proposal will rest on a range of factors – not just the basic geological setting (e.g. rock type, faults and fractures), but a detailed understanding of features such as the hydrogeology, geochemistry, and how RWM proposes to design, engineer and operate a facility within that setting.

115 The main principle of geological disposal of higher activity radioactive waste is to put a number of engineered and natural barriers between the wastes and the surface to ensure that the materials are isolated from the surface environment and contained for the time required for the levels of radioactivity associated with them to naturally reduce.

116 The aim of the long-term environmental safety case is to demonstrate that the combination of barriers can provide the necessary long-term safety. The barriers include the form of the waste, the waste containers, the buffer material around the containers, and the natural geological barrier.

117 The geological barrier is provided by the rock in which the GDF is constructed and the surrounding and overlying rocks. Many rocks in the UK have been stable for many millions of years and so have the ability to isolate the wastes from the surface environment over the long timescales required. In suitable formations deep underground (between 200 - 1000 metres), the GDF is protected from significant climate or landform changes at the surface and any movement from earthquakes is much reduced. The rock in which the GDF is constructed will also protect the engineered components around the waste.

[107] RWM. Overview of the generic Disposal System Safety Case 2016. Available at: https://www.gov.uk/government/publications/generic-disposal-system-safety-case-for-a-geological-disposal-facility-overview

The regulators

118 The regulators in England with an important role to play in geological disposal are the Environment Agency, the Office for Nuclear Regulation and the Health and Safety Executive.

119 The Environment Agency is responsible for implementing and enforcing environmental protection legislation in England. Its areas of responsibility include environmental pollution, waste management, flood risk management, water resources, fisheries and conservation. The Environment Agency also regulates disposals of radioactive waste from nuclear licensed sites as well as from other premises that use radioactive substances. Disposals of radioactive waste include radioactive discharges to air and water and disposal of solid waste to land, including disposals at the Low Level Waste Repository as well as geological disposal.

120 The Office for Nuclear Regulation licenses nuclear sites and is responsible for regulating safety and security, on licensed nuclear sites in Great Britain. It also regulates the safety of transporting radioactive materials and plays a key role in ensuring that the UK's safeguards obligations are met. The Office for Nuclear Regulation and the Environment Agency work together regulating the management and storage of higher activity radioactive waste on nuclear licensed sites to ensure decisions about the management of higher activity radioactive waste take into account the disposability of conditioned waste alongside the nuclear safety considerations.

121 The Health and Safety Executive will have a role in ensuring the health and safety of work relating to surface-based investigations, for example, where deep boreholes are being drilled to investigate the geology of possible sites.

122 Developing a GDF in England will also involve Natural England and, if a coastal site is selected, the Marine Management Organisation. Natural England has specific responsibilities for making sure that England's natural environment, including its land, flora and fauna, freshwater and marine environments, geology and soils, are protected and improved. The Marine Management Organisation's role is to license, regulate and plan marine activities in the seas around England.

123 It should be noted that the regulators have no role in making decisions about selecting potential sites for a GDF. The regulators will support this process by explaining how they will regulate a GDF. They will only license or permit a GDF if it can be shown to meet the stringent regulatory requirements for protection of people and the environment.

Regulatory control

124 Regulation of the development, operation and eventual closure of a GDF takes place in a staged manner. RWM is not able to progress from one stage to the next without first securing the relevant permissions it needs. The purpose of this staged approach to regulation is to ensure that at all times the development is undertaken safely and

securely, and in ways that ensure proper protection of people and the environment, without inadvertently undermining the long-term performance of the facility.

125 The formal regulatory process for geological disposal will start when RWM decides there is a need for surface-based investigations such as drilling boreholes. At this stage, RWM will need to apply to the Environment Agency for an environmental permit prior to undertaking any such works. As stated in paragraph 121 the Health and Safety Executive will regulate the health and safety of work relating to borehole investigations.

126 Environmental permits granted under the Environmental Permitting (England and Wales) Regulations 2016 allow an operator to carry out certain activities, subject to conditions and limits on discharges to the environment. The regulations cover multiple environmental permitting regimes, including radioactive waste disposal. The Regulations ensure RWM controls discharges to air and water, protects groundwater and surface water, prevents land contamination and manages waste appropriately during the investigation, construction, operation and closure of the facility.

127 A GDF will be a nuclear installation under the Nuclear Installations Act 1965. Nuclear sites require a licence from the Office for Nuclear Regulation in order to operate under the Nuclear Installations Act 1965. The Office for Nuclear Regulation will ensure that RWM has met the requirements of its licensing process before construction commences. Once satisfied it will grant a nuclear site licence which will last the operational lifetime of the GDF. Granting the licence does not, in itself, give the licensee permission to begin nuclear safety-related construction on the site, as the Office for Nuclear Regulation will ordinarily use the conditions attached to the licence to specify that the licensee should not commence nuclear safety-related construction without a regulatory Consent. Throughout construction and installation, the Office for Nuclear Regulation may identify further “hold points” where Office for Nuclear Regulation Consent is required before the licensee may proceed from one stage to the next. The Health and Safety Executive’s involvement will cease once the Office for Nuclear Regulation has granted a nuclear site licence for a GDF.

128 The regulators work closely together to ensure that their separate regulatory requirements are met in a way that provides the required high standard of protection of people and the environment. It is expected that joint regulation between the Office for Nuclear Regulation and the Environment Agency will continue while the facility is being

Figure 14. Staged regulation governing GDF

constructed, while it is operating and during the closure period. At an appropriate time after the facility has closed, when the requirements to protect people and the environment now and in the future have been demonstrated, the site will no longer need to be regulated and regulatory control will end. The figure above illustrates the regulatory process from the launch of the siting process through to the construction, waste emplacement and closure of a facility.

Relationship between the siting process, land-use planning and regulation

129 The environmental permitting and nuclear site licensing processes are independent from decision-making relating to site selection and land-use planning. The regulators support the processes for site selection and land-use planning by providing information, advice and comment on matters within their respective remits. Such discussions, between RWM, regulators, communities and others, will be an important part of implementing geological disposal throughout the lifecycle of a GDF.

130 The Office for Nuclear Regulation and the Environment Agency must be consulted in any application for development consent for a GDF. The Environment Agency will be consulted on the Environmental Statement(s) and Habitats Regulations Assessment(s) required to support development consent order applications for deep boreholes, and for each subsequent stage in developing a GDF that requires planning consent. The Environment Agency will also be consulted on other matters within its area of responsibility such as environmental permitting, flood risk management and groundwater protection.

131 The regulatory process will continue until the regulators accept that the operator no longer needs to hold a nuclear site licence or environmental permit.

14

Appendix 3 Welsh Government working with communities policy for implementing geological disposal

Introduction

1 Radioactive waste disposal is a devolved matter - the Welsh Government is responsible for determining the policy for this within Wales. Based on international consensus and independent scientific advice the Welsh Government has adopted a policy for geological disposal as the best and safest long-term management solution for the most hazardous elements of the radioactive waste inventory. This policy is based on a community or communities being willing to host a geological disposal facility (GDF). Geological disposal will provide a permanent and safe solution for the disposal of the most hazardous solid radioactive waste. Some less hazardous solid radioactive waste can be safely disposed of in alternative, highly engineered near surface facilities but a GDF will still be required in order to dispose of the most hazardous radioactive waste.

2 Although the Welsh Government has adopted a policy for the geological disposal of the most hazardous radioactive waste this does not mean that a GDF will necessarily be built in Wales or that the Welsh Government will seek to have a GDF built in Wales. Our policy is clear: a GDF will only be built in Wales if a community is willing to host it and a suitable and safe site can be found.

3 This appendix details the Welsh Government policy for engaging with communities and the support available for communities which may wish to enter discussions, without prior commitment, about potentially hosting a GDF.

4 Safety and protecting human health and the environment are fundamental to delivering geological disposal.

5 This appendix outlines the way that the delivery body, Radioactive Waste Management Ltd (RWM)[108], will work with parties in Wales who may be interested in finding out more about the potential for hosting a GDF.

[108] RWM is part of Nuclear Waste Services. Nuclear Waste Services is a division of the Nuclear Decommissioning Authority (NDA) group, and brings together the expertise of site operator LLWR, which manages the low level waste site in Cumbria and associated operations, and RWM which is responsible for delivering the Geological Disposal Facility (GDF) Programme, as well as the NDA's Integrated Waste Management Programme (IWMP)

Compatibility with the UK Government policy

6 The UK Government is funding the GDF programme, so it is important that there are compatible arrangements between Wales and England with regards to key elements e.g. the Right of Withdrawal and the Test of Public Support. To this end we have worked closely with the Department for Business, Energy and Industrial Strategy (BEIS) on the development of policy proposals that, whilst based on the Welsh Government's own public consultation and policy development process, remain sufficiently aligned with UK Government policy to support efficient delivery. Consequently, this appendix follows a similar structure to that used by the UK Government to cover its respective policy and in places uses common text. Compatible arrangements do not necessarily have to be identical, and we recognise that arrangements adopted in Wales will need to reflect policy differences between the countries and considerations such as the Welsh language, separate planning arrangements, and the way that local authorities are structured.

Purpose of this appendix

7 This appendix provides the policy framework for RWM to work in partnership with communities (and the local authority[109] or authorities of that community) in Wales that are potentially interested in finding out more about hosting a GDF. Welsh Government policy will only allow a GDF to be constructed in Wales if a community partnership is formed and engaged in discussions, is supported by the relevant local authority(ies) and if a positive Test of Public Support takes place in that community. As every community is different the policy is sufficiently flexible to allow for the needs of different communities but within a structure that ensures any potential host community is treated fairly. This policy sets out the roles of the various parties that will have a role in the siting process.

8 The process to find and select a location for a GDF requires detailed technical work that is estimated to take about 15 to 20 years. It is an inter-generational project that will span several political cycles. The construction and operation of the facility will take a further 100+ years.

9 Discussions about a proposed location for a GDF can be initiated by anyone or any group of people with an interest in the siting process, and who wish to propose an area for consideration. The interested party may suggest an area of any size; it could be as large as a county, or it could be a small area of land.

10 Once RWM and the interested party have had an initial exchange of information and agree the proposal merits further consideration, they must jointly inform all relevant local authorities and open up discussion more widely in the community. RWM will carry out

[109] The term local authority is used throughout this appendix – this refers to the 22 unitary authorities in Wales: https://gov.wales/topics/localgovernment/unitary-authorities/?lang=en

increasingly detailed investigations over a number of years. If there is continuing interest from the community then deep investigative boreholes will need to be drilled to carry out further testing of the geological conditions at depth. RWM will need to apply via the Welsh planning system for planning permission to carry out deep borehole investigations at potential sites and to Natural Resources Wales (NRW) for environmental permits. This is likely to take around 18 months from the application to the decision.

11 Detailed site investigations may take up to 15 years, as it is essential to understand the geology and be confident that a facility can be designed to safely and securely isolate and contain the radioactive waste. When RWM has sufficient information to satisfy itself that a GDF is viable and the community has indicated it is willing to host it, RWM will be able to apply for planning permission to build a GDF. A GDF will also require environmental permits from NRW and a nuclear site licence from the Office for Nuclear Regulation.

12 RWM anticipates that it will take around 10 years to construct the first vaults within a facility. Alongside construction, there will likely be continued underground investigations and testing of the geology to make sure that the GDF meets the necessary high standards of safety, security and environmental protection. Once the first vaults have been built, construction of the facility and the disposal of the waste will continue in parallel; with new tunnels and vaults being built as existing ones are filled.

Welsh Language

13 RWM is aware of the need to ensure Welsh language or bilingual provision where required. RWM is fully aware of the importance of ensuring that discussions can be conducted bilingually. RWM understands the importance of stakeholders having the option to communicate in Welsh or English and will ensure that suitable provision is made or arranged.

14 RWM’s public-facing material relevant to Wales is already bilingual. RWM appreciates the importance of ensuring that material made available to a potential host community, interested party, or stakeholder in Wales can be provided in both Welsh and English.

Initial Discussions

15 Identifying a willing host community with a suitable site for a GDF will be a long process. This is because it will take RWM time to identify, investigate and assess potential sites and make sure that communities that choose to get involved understand what will happen and how it might affect them. The intention is that RWM, as the delivery body, will work in partnership with communities to provide answers to their questions and any concerns, so the community can make an informed decision about whether to support a facility being developed in their area as more information becomes available through RWM's investigations.

16 Initially, RWM will raise awareness of geological disposal with the public and invite anyone with an interest to have initial conversations to find out more. Discussions with the delivery body can be initiated by anyone. We anticipate that local authorities, landowners, businesses, community groups or interested individuals may come forward to request further information.

17 An interested party could come forward without any specific land in mind but a general ambition to find out if there is potential to develop a GDF within their area. Alternatively interested parties could come forward with a particular site in mind. RWM's investigations to understand whether a potential site could be suitable will extend beyond the area of the proposed site itself. This is because in order to determine whether a site is potentially suitable, RWM will need to understand the surrounding geological environment.

18 It is possible that an interested party may suggest a location for a GDF beneath the UK's territorial waters, with the surface facilities being located on land, which could be a feasible option. Government owned land may also be put forward. Where a third party puts forward a potential site that it does not own, the third party and RWM should consider at what point it would be appropriate to include the landowner(s) in further discussions.

19 In the case of a local authority coming forward the initial area under consideration could be very large and RWM would seek to understand more about the area proposed, based on existing, readily available information.

20 Under all scenarios RWM will undertake initial work to understand whether the land identified has any potential to host a GDF. At this point discussions may remain confidential (subject to disclosure requirements contained in information law legislation, including the Freedom of Information Act 2000 and the Environmental Information Regulations 2004), though they should be made public at the earliest opportunity if the interested party and RWM decide to move forward.

21 It may be that RWM decides there is little or no prospect of siting a GDF in the area under consideration, or the interested party, after finding out more from RWM, decides

that they are no longer interested. If, however, both RWM and the interested party want to progress they must inform all relevant local authorities before going public with the proposals and starting a dialogue with the people in the local area.

Forming a Working Group and identifying a Search Area

22 In order to begin a conversation with the people in the area, the interested party, RWM, an independent chair and an independent facilitator will form a Working Group. The term 'Working Group' replaces the term 'formative engagement team' used in the consultation as the former is more readily understood by stakeholders.

23 This early part of the process is essentially about fact finding, gathering information about the community and providing information to the community about geological disposal. At this stage, it is important to ensure a community has the ability to have fact-finding and exploratory discussions with RWM without having to wait for a relevant local authority to join the Working Group. Therefore, relevant local authority membership on the Working Group is not a requirement, although it would be preferable to have at least one relevant local authority as a member, given their invaluable knowledge and experience of the local area and people. Relevant local authorities will receive financial support from RWM to participate throughout the process including as a member of the Working Group, so that local taxpayers do not incur any additional financial burden. Funding will also be provided to support the Working Group's activities. Funding will also be available to cover reasonable out-of-pocket expenses for individuals taking part in the Working Group (e.g. travel costs for attending meetings). RWM will provide clear advice and guidance on activities where expenses can be covered and how costs will be reimbursed.

24 The Working Group may also want to consider whether it would be beneficial to invite representation from a Special Enterprise Zone[110] and community councils.[111] Given the potentially large number of community councils in any given area, it may not be feasible for them all to join. It may instead be possible for them to collectively agree to send a representative to join the Working Group.

Defining a Search Area

25 An early task for the Working Group will be to identify a Search Area. The Search Area is the geographical area within which RWM will seek to identify potentially suitable sites to host a GDF. Defining the boundaries of the Search Area is important in order to identify appropriate membership for the Community Partnership, including the local authority(ies), and to determine eligibility for Community Investment Funding. Projects, schemes and initiatives within the Search Area may be eligible for this funding. The

[110] https://businesswales.gov.wales/enterprisezones/
[111] http://www.onevoicewales.org.uk/OVWWeb/all_about_councils-7450.aspx

Community Partnership and Community Investment Funding are discussed in paragraphs 33-50 and 67-78 respectively.

26 A number of interested parties from different areas of England and Wales may come forward during the siting process, so it is possible there may be a number of Search Areas in the siting process at any given time.

27 The Search Area will be derived from the area first put forward for consideration by the interested party and will be defined using community council area boundaries. Some parts of Wales don't have a community council but are part of a community council area. The Search Area will, therefore, encompass all the community council areas within which RWM will be able to consider potential sites.

28 For areas which include potential for development under the seabed, the Search Area will comprise only that area on land.

29 The geographical boundaries of the Search Area are likely to change as the search for a potential location for the surface and underground facilities progresses and more is understood about the area. The Search Area will be refined over time by the Community Partnership (the Community Partnership is discussed in more detail in paragraphs 33-50). As RWM investigations progress the Community Partnership may identify areas that they want to rule out of consideration or rule in additional areas that they did not at first consider to be part of the Search Area. Any future changes to community council area boundaries will be reflected in the Search Area as it evolves over time.

30 Eventually the Search Area will be narrowed down until the Community Partnership identifies a specific site and the community which will be directly affected by the facility being on that site. This will be referred to as the Potential Host Community. The Potential Host Community is discussed in more detail in paragraphs 83-87.

The role of the Working Group

31 As it identifies the Search Area the Working Group will start work to understand the local area and any issues or questions the community within it might have, and to identify members of the community who may be interested in working with RWM by joining a Community Partnership. This work will include:

- gathering information about the different people and organisations in the area who will have an interest or who are likely to be affected;
- gathering information to understand the existing geographic, social, economic, environmental, cultural (including the Welsh language) and administrative structures of the Search Area;

- understanding the community's issues, concerns and questions about geological disposal and the process for identifying potential locations for a GDF;
- engaging with the local authority(ies) within the Search Area (if they have not joined the Working Group).

32 RWM will use independent evaluation to review the practical effectiveness of this part of the process to help improve future engagement.

Table 1 Membership of Working Group

Member	Role
Independent Chair	The Chair will ensure that meetings and discussions are run appropriately. Someone to fulfil this role could be procured from an approved list of contractors on behalf of the interested party, or there may be existing community organisational structures in the local area that could be used.
Independent Facilitator	The independent facilitator will aim to ensure that discussions progress in a constructive and informative manner. The facilitator can assist in asking relevant questions and directing conversations to cover the points of interest from the interested parties and other members of the community.
Interested Party	This is the group, organisation, or individual(s) who first started discussions with RWM.
RWM	The delivery body who are engaging with the community – providing information to the community and promoting the benefits of a GDF.
Relevant Local Authorities (optional)	Relevant local authorities are the local authorities that represent all or part of the Search Area. It may be that the local authority is the interested party. If not, they must be informed of discussions and invited to join the Working Group.

The Community Partnership

33 A Community Partnership can only be formed and continue to operate if the local authority(ies) in the Search Area agree to participate. Where there is more than one local authority in the Search Area, they must each be invited to join. Where a relevant local authority decides not to be member, then the community council areas within its boundaries will not form a part of a Search Area or a Potential Host Community. When

identifying prospective members of the Community Partnership, the Working Group will need to consider the types of skills, knowledge and experience that the Community Partnership will need. It may invite particular organisations to join, as well as inviting applications through an open process. It should aim for membership that is reflective of the community in the Search Area. Prospective members of the Community Partnership will be identified by a selection panel of Working Group members. The selection panel must include the independent chair, RWM and any local authority on the Working Group. The process for selecting members must be open and transparent. Prospective members will be appointed onto the Community Partnership upon signing the Community Partnership Agreement (see paragraphs 48-50).

34 The Community Partnership will be formed of representatives from community groups, organisations and individuals, which reflect as far as possible the community, any relevant local authority(ies) and RWM. It would be appropriate to invite representation from organisations that have responsibility for managing or regulating large areas of land such as National Park Authorities or the National Trust Wales should the Search Area include land for which they are responsible.

35 The Community Partnership should seek to include representation from community councils where they exist. Given the potentially large number of community councils in a Search Area, it may not be feasible for them all to be members of the Community Partnership. It may be possible for community councils to collectively put forward a representative for membership of the Community Partnership to reflect their views. Once the Potential Host Community is identified, there may be scope for individual community councils to be on the Community Partnership. It may also be appropriate to invite representatives of Special Enterprise Zones. Members representing organisations will be responsible for sharing all information discussed and developed through the Community Partnership with the rest of their organisations.

36 It will be for each Community Partnership to decide on its number of members and to appoint a chair. However, in order to function effectively it is suggested it should be around 12 people.

The role of the Community Partnership

37 The role of the Community Partnership is to:

- facilitate discussion with the community;
- identify relevant information that people in the Search Area and Potential Host Community want or need about the siting process;
- be the key vehicle for community dialogue with RWM;
- review and refine the boundaries of the Search Area as RWM’s investigations progress;

- identify priorities for community investment funding;
- make recommendations to the local authority(ies) on the Community Partnership on whether to invoke the Right of Withdrawal and if and when to launch a Test of Public Support;
- agree a programme of activities to develop the community's understanding of the siting process and the potential implications of hosting a GDF;
- develop a community vision and consider the part a GDF may play in that vision;
- monitor public opinion in relation to siting a GDF within the Search Area and the Potential Host Community.

38 There will be a lot of information to share between the community, RWM and other parties (e.g. Natural Resources Wales and the Office for Nuclear Regulation) over a long period of time. The Community Partnership provides a vehicle for sharing that information and to find answers to the questions the community may have about geological disposal, the siting process and how they, as a community, could benefit.

39 Sub groups could be set up to consider some of the issues set out above, for example on communication and engagement, in which people from the community could get involved. We would expect that members of sub-groups would normally be appointed through an open process; however, from time to time the Community Partnership may want to co-opt members with particular expertise.

40 RWM will have a key role to play in the Community Partnership as a source of information and expertise on geological disposal and as the developer working together in partnership with the community. RWM will help the community access information from a range of resources, from its own technical and scientific teams, or from independent parties who can help to answer questions.

Table 2 Membership of the Community Partnership

Member	Role
Community Members	Organisations and individuals to reflect the make-up of the community.
Relevant Local Authorities	Relevant local authorities are those whose community council areas are in the Search Area (and Potential Host Community when it is identified). If a local authority does not agree to join or decides to leave the Community Partnership then the land within the community council areas in its boundaries will no longer be considered in the siting process. Local authorities on the Community Partnership will take two key decisions. They will have the final say on whether to seek to withdraw the community from the siting process and on seeking the community's views on whether it wishes to host a GDF.
RWM	A key member of the partnership as the delivery body of a GDF. They will provide information as required by the Community Partnership and provide updates on their investigations into the feasibility of the area to host the facility. RWM will explain the concept of a GDF and its benefits. They will be responsible for all technical decisions.
Chair	At the beginning this could be the same chair as was used during Working Group discussions, or a new chair could be appointed. They will ensure that the work of the Community Partnership is fair, unbiased and reflects the needs of the community.

Decision making within the Community Partnership

41 Local authorities play a crucial role in respect of planning, infrastructure development and service provision. For this reason, and to ensure democratic accountability, the Welsh Government has decided that the relevant local authority(ies) on the Community Partnership will take two key decisions. They will have the final say on:

- whether to seek to withdraw the community council areas within its boundaries from the siting process (through invoking the Right of Withdrawal);
- seeking the community's final view on whether it wishes to host a GDF (i.e. proceed to a Test of Public Support).

42 As explained above a Search Area and Potential Host Community could potentially encompass land in more than one local authority. The siting process will not continue within the boundaries of a local authority in Wales if it does not agree to be on the Community Partnership. Any relevant local authority in Wales will be able to bring the siting process to an end in the community council areas within its boundaries by either leaving the Community Partnership or enacting a Right of Withdrawal. The relevant local authority(ies) can either take the decision to withdraw the community from the process themselves or seek the community(ies)'s views on this directly.

43 Although the relevant local authority(ies) will have the final say in relation to these two key decisions, they should involve other members of the Community Partnership in discussions on whether they intend to seek to withdraw the community from the process and the appropriate time to launch a Test of Public Support. Equally the other members of the Community Partnership should be able to make recommendations to the local authority(ies) on the Community Partnership on invoking the Right of Withdrawal and the timing of the Test of Public Support.

44 The relevant local authority(ies) must, however, seek a final view from the community, through a Test of Public Support, on whether it is willing to host a GDF before RWM seeks the necessary regulatory approvals and planning permission for the construction and operation of a GDF. The Test of Public Support can only take place within community council areas within a local authority if that local authority is on the Community Partnership and has agreed to it being held.

45 If the relevant local authority(ies) on the Community Partnership agree that it is an appropriate time to seek the community's view on whether or not it wishes to host a GDF then the method for taking that Test of Public Support will be decided by the Community Partnership as a whole. The Community Partnership's view on what mechanisms could be used for this should be set out in the Community Partnership Agreement, which can be updated as views on this develop over time. The Community Partnership Agreement is discussed in more detail at paragraphs 48-50.

46 If the relevant local authority(ies) agree that the decision to withdraw the community from the process should involve the community directly then the method for seeking the community's view on possible withdrawal from the process will be considered by the Community Partnership as a whole. The Community Partnership's view on what mechanism could be used for this should be set out in the Community Partnership Agreement, which can be updated as views on this develop over time. The Right of Withdrawal and the final Test of Public Support are discussed in more detail in paragraphs 88-94 and 95-03 respectively.

47 All other decisions, such as the priorities for community investment funding, or agreeing the programme of activities, should be taken by the Community Partnership. It will be for the Community Partnership to decide how it takes these decisions, for instance whether

unanimity is required, or a simple majority and what constitutes a quorum. This should be set out in the Community Partnership Agreement.

The Community Partnership Agreement

48 The prospective members of the Community Partnership will develop and sign a Community Partnership Agreement. Once the Community Partnership Agreement is in place Community Investment Funding can be made available. (Community Investment Funding is discussed further in paragraphs 67-78).

49 The Community Partnership Agreement will set out the principles of how the members of the Community Partnership will work together and their roles and responsibilities. It should include terms of reference to clarify how the Community Partnership operates, how it will take decisions, settle disputes and an outline programme of activities and how progress in completing the activities will be monitored as set out in paragraphs 51-53. RWM will provide a template Community Partnership Agreement and further guidance.

50 In the first instance, the Community Partnership Agreement will cover the period immediately following the establishment of the Community Partnership. As the siting process progresses, the Community Partnership Agreement may evolve and will be subject to review, for example, to reflect any change in geographical scope of the Search Area and therefore membership.

Community engagement activities

51 The Community Partnership will need to engage with the community over a long period of time. Getting people actively involved on any issue can be challenging and it is possible that vocal minorities can dominate debate. It will therefore be important to open up community participation through a wide number of channels.

52 One way of doing this could be to hold open public meetings of a Community Stakeholder Forum, inviting people from the Search Area and neighbouring local authority areas. The Forum could meet at regular intervals, and could also exist online, giving the Community Partnership the opportunity to report on activities it has undertaken and the outcome of those activities. It would give members of the community the opportunity to raise questions and issues that they want addressed, which could then be fed into the programme of activities. It will be important that all interactions between the Community Partnership and people in the community are made public.

53 The Community Partnership could also consider engagement through social media, dedicated outreach work with particular groups (for example engagement with young people through schools and colleges) and using existing networks to reach out to people. It will also be important to consider how to address diversity and accessibility

issues so that people within the Search Area or Potential Host Community are not excluded from participating.

Communicating the inventory for disposal

54 An important issue that will need to be communicated to the community will be the inventory for disposal. As set out in chapter 8 paragraph 18.81 the inventory for disposal comprises a number of categories of waste and material. It is not anticipated that those categories of waste and material will change significantly. If, however, the list of waste and materials were to change significantly it would need to be discussed with the Potential Host Community. A process for agreeing any future material changes to the categories of waste to be disposed of in a GDF would need to be agreed before the Test of Public Support.

55 In April 2022 the UK Government set out an ambition in its British Energy Security Strategy[112] to increase its plans for deployment of nuclear power to up to 24 gigawatts through large-scale nuclear power stations, small modular reactors (SMRs) and advanced modular reactors (AMRs).

56 The waste from a new build programme of large-scale nuclear power stations and SMRs, comprising spent fuel (yet to be declared waste) and ILW not suitable for disposal in near surface facilities will be disposed of in a GDF. Waste from any future AMRs will also be disposed of in a GDF if it is suitable to do so. It would need to undergo an Assessment of Disposability by RWM in support of the regulatory and permitting processes of the ONR and relevant environmental agency before a final decision can be taken on whether it will be disposed of in a GDF.

57 The Welsh Government recognises that communities considering hosting a GDF will want to have as clear as possible an understanding of the inventory for disposal before they take a Test of Public Support. This information will also be needed by RWM for its application for the relevant planning consent for a GDF. Changes in the UK Radioactive Waste Inventory (UKRWI), and hence the Inventory for Geological Disposal, will occur as UK nuclear sites evolve and the decommissioning programme matures. The estimated quantity and the types of waste to be consigned to a GDF needs to be visible. Regular published updates to the inventory will ensure transparency. UKRWI updates are currently published every 3 years. To support the implementation of geological disposal RWM also publishes a quantified description of the Inventory for Geological Disposal every 3 years. In future this will continue to include updated estimates of waste arising from new nuclear build, based on the realistic pipeline of development at the time. The most recent report was published in 2021, together with the methodologies and assumptions that were used in its development. The UK and Welsh Governments

[112] British Energy Security Strategy. Available at: https://www.gov.uk/government/publications/british-energy-security-strategy/british-energy-security-strategy

are committed to providing as much clarity as possible as the position evolves going forward.

Funding to support the activities of the Community Partnership

58 Engagement Funding will be provided by RWM throughout the process. It is intended to support the activities of the Working Group and the Community Partnership.

59 Engagement funding is intended to cover the costs of the Community Partnership's engagement activities, information gathering, and support services that may be required. It will be used to cover the administrative costs associated with the operation of the Community Partnership and disbursement of community investment funding. It will also provide for independent facilitators to work with the Community Partnership and Stakeholder Forum to provide constructive guidance and challenge to make sure all voices are heard and to help reconcile different views where possible.

60 The types of engagement and information gathering activities by the Community Partnership provided through engagement funding could include:

- activities through which communities learn about geological disposal;
- commissioning of reports on specific issues;
- accessing independent scientific and technical advice;
- communications activity, such as a Stakeholder Forum, websites, information leaflets, social media and outreach and information events.

61 Relevant local authorities will receive financial support from RWM to participate throughout the process including as a member of the Community Partnership, so that local taxpayers do not incur any additional financial burden. Engagement Funding will also be available to cover reasonable out-of-pocket expenses for individuals taking part in the work of the Community Partnership (e.g.travel costs for attending meetings). RWM will provide clear advice and guidance on activities where expenses can be covered and how costs will be reimbursed.

Access to scientific and technical information

62 It is vital that communities have confidence in the information provided to them about the siting process, including on all relevant scientific and technical issues. RWM will be the first port of call for information on geological disposal and the siting process. The Community Partnership will also be able to call on the Government's independent advisory body, CoRWM and regulators.

63 The Community Partnership may also commission reports and research on specific topics from independent experts, as part of the agreed programme of activities. Given the range of advice and information available it may be that the Community Partnership receives conflicting statements from different parties. If that is the case the Government is making available a mechanism through which the Community Partnership can access independent experts for views on contested and unresolved scientific or technical issues.

64 The Welsh Government and BEIS have signed a Memorandum of Understanding with a number of Learned Societies, who have agreed a mechanism under which the Community Partnership may approach their members for a view on contested and unresolved scientific or technical questions it may have remaining after discussing them with RWM, the regulators and any research and reports that they may have had commissioned. It is not envisaged that this mechanism will be used on a regular basis, only where there are contested and unresolved scientific or technical issues that have arisen through the community engagement and one of the parties feels that a further view from a relevant Learned Society member may be helpful in addition to all of the existing information provided by RWM. The mechanism can also be used by RWM.

65 The Memorandum of Understanding has been signed by: BEIS; the Welsh Government; RWM; the Geological Society of London; the Institute of Environmental Management and Assessment; and the Learned Society of Wales. A committee will be formed of these Learned Societies for them to identify the appropriate expert (depending on the subject matter) who will be asked to provide a view. This may be an individual or collective view from a group of people. Where the question falls outside the expertise of the Committee, it may approach a Learned Society which has not signed the Memorandum of Understanding.

Funding for the community in the Search Area and the Potential Host Community

66 In addition to the Engagement Funding explained in paragraphs 58-61 there will be Community Investment Funding for communities that participate in the process i.e. communities in the Search Area and the Potential Host Community, and significant additional investment for the community that eventually hosts a GDF.

Community investment funding

67 A GDF is a multi-billion pound infrastructure investment and is likely to have a positive effect on the local economy. It is estimated that a GDF will provide jobs and benefits to the economy for more than 100 years. Current estimates are it will directly employ around 600 skilled, well-paid staff per year, over the duration of the project, with workforce numbers rising to more than 1,000 during construction and early operations.

In addition, it is also likely to involve major investments in local transport facilities and other infrastructure and create secondary benefits within industry, local education resources and local service industries. However, these benefits will not materialise for a number of years. The UK Government is therefore making available Community Investment Funding to those communities that form Community Partnerships and participate in the siting process.

68 The funding will be available once the Community Partnership is formed and a Community Partnership Agreement has been signed. It will continue for as long as the community remains in the siting process and continues to demonstrate engagement through a programme of activities.

69 During the early parts of the siting process, the UK Government has committed to make available Community Investment Funding of up to £1 million per community per year. This will rise to up to £2.5 million per community, per year for communities where deep borehole investigations take place to assess the geological suitability of a site. Initially there may be several communities interested in participating in the process and these will go through a down selection process to a smaller number of communities that will progress to deep borehole investigation. The funding will be provided by RWM. It must not be used to fill shortfalls in local authority budgets. The Community Investment Funding is provided in addition to the Engagement Funding described above in paragraphs 58-61.

70 Community Investment Funding must be spent in accordance with best practice in delivering value for money as set out in the Managing Public Money guidance issued by HM Treasury and in accordance with other legal requirements, including State aid rules. RWM will need to ensure that the funding is distributed in accordance with the requirements of regularity and propriety set out in the guidance. Regularity requires that the use of public money is compliant with relevant legislation and delegated authorities. Propriety relates to meeting the high standards of public conduct, robust governance requirements and parliamentary expectations (in particular, transparency).

71 The UK Government has developed some high-level principles for the use of community investment funding. The funding can be used to pay for projects, schemes or initiatives that:

- improve community well-being, for example improvements to community facilities, enhancement of the quality of life or health and well-being of the community;
- enhance the natural and built environment including cultural and natural heritage, especially where economic benefits, for example through tourism, can be demonstrated; and
- provide economic development opportunities, for example employment opportunities, job creation, skills development, education or training, promotion of local enterprise, long-term economic development or economic diversification.

72 The Community Partnership will need to consider these principles along with any local economic vision, socio-economic strategies or plans in order to develop locally specific funding criteria. They may wish to consider funding initiatives that could help them derive greater benefit from hosting a GDF.

How will Community Investment Funding be administered?

73 The Welsh Government consider it advisable that the Community Investment Funding should be administered by a body separate to RWM. This is intended to provide additional transparency and independence from RWM, as the conduit of the funding. The body that administers the funding must have a legal personality (be a legal 'entity') as it will need to enter into an agreement or agreements with RWM, employ staff to support applicants for funding and enter into agreements to release funding for projects.

74 An appropriate existing community or public body could be used to administer the funds if the Community Partnership wishes, provided it has the necessary skills and resources, a legal personality and the appointment is compliant with all relevant procurement rules.

How will the community access the Community Investment Funding?

75 Community Investment Funding will be available for projects, schemes and initiatives within the Search Area and the Potential Host Community when it is identified. Once the Potential Host Community is identified the Community Partnership may decide to prioritise applications within the boundaries of the Potential Host Community.

76 The funding will be accessed through an open and transparent application process. Applicants will have to set out what they would like the funding for, how it will benefit the community and how it meets any locally agreed criteria. Applications would be submitted to the fund administrator. A Community Investment Panel would review recommendations made by the funding administrator and decide on applications for funding against the principles set out in paragraph 71 and any additional criteria the Community Partnership has decided to apply. The Community Investment Panel will be made up of RWM and other members of the Community Partnership. The Community Partnership may choose to appoint members to the Community Investment Panel through an open process. The funding administrator will provide advice and support to help members of the community apply for funding.

77 The UK Government, who will provide the funding via RWM, recognise that some projects, schemes, or initiatives may be spread over a number of years. Although the funding will be available on an annual basis this should not be a barrier to funding multi-year projects. RWM will provide further guidance on this point.

78 If either the community or RWM withdraws from the siting process the community investment funding will end in that community. Any funding that has been committed within that financial year by the Community Investment Panel will be honoured.

Significant Additional Investment for the host community

79 The UK Government will provide additional investment to the community that is ultimately selected to host a GDF. For the community chosen to host the GDF the significant additional investment will replace the Community Investment Funding. This additional investment will enhance the significant economic benefits that are inherent in hosting a major infrastructure project and recognise the long-term commitment from the community to the national interest. Investment could include improved local education and skills capacity, improved transport infrastructure, or improved recreational facilities. This additional investment will be significant – comparable to other international GDF projects.

80 The investment is additional to the investment and jobs that a major infrastructure project of this kind will bring to an area. It is also additional to any funding for planning obligations associated with mitigating impacts during development of a GDF, the Community Investment Funding and Engagement Funding provided during the siting process. RWM will work with the Community Partnership to identify a community vision, and what this might mean for the significant additional investment package.

Property compensation

81 The UK Government and Welsh Government recognise that communities may be concerned about effects geological disposal infrastructure may have on property values in the local area. Most major infrastructure projects involve making provision for compensation for local residents and property owners who experience an impact on the value of their property as a result of construction of the new infrastructure.

82 RWM will undertake work with Community Partnerships in the siting process to assess whether there is likely to be any impact on local property prices and consider whether a property support scheme would be appropriate. Once this assessment work is complete, a decision will be taken and an appropriate approach will be adopted for each community.

The Potential Host Community

83 The Potential Host Community is the community within the geographical area that could potentially host a GDF. It will be identified over time from within the Search Area. The boundaries of the Potential Host Community need to be defined to determine who will get a say in the Test of Public Support.

84 The Potential Host Community will be defined in Wales by community council areas. The Potential Host Community will include all of the community council areas in which the following are located:

- proposed surface and underground elements of a GDF; any associated development which is relevant to the GDF facility and any land required to mitigate impacts;
- transport links/routes from the GDF site to the nearest port, railhead or primary road network (i.e. out to where minor roads meet the nearest A roads);
- direct physical impacts associated with underground investigations, construction and operation of the geological disposal facility (identified though environmental impact assessment work carried out to support RWM's engagement with communities and its planning permission applications).

85 The Potential Host Community will likely be made up of several community council areas. Furthermore, all the community council areas could be contained within one local authority or could cross local authority boundaries. The geographical boundaries of the Potential Host Community will be agreed by the Community Partnership based on information gathered through the siting process and the criteria above.

86 The Welsh and UK Government's view is that only residents in the area that will be directly impacted by the development should have a final say in whether they wish to host a GDF. It will be the people living in the Potential Host Community, through a Test of Public Support that will decide whether they want RWM to continue with the process for siting a GDF in the area. The Test of Public Support is considered further in paragraphs 95-103.

87 If the Potential Host Community boundary is near other local authority boundaries, the Community Partnership will need to consider engaging with people within neighbouring local authorities. They would not, however, have a say in the Test of Public Support.

Right of Withdrawal

88 The community can withdraw from the process at any point up until a Test of Public Support is taken.

89 The Community Partnership itself might have concerns about continuing further in the process. Or it may judge, through its monitoring of public opinion, that there is no realistic prospect of building support for a GDF within the community.

90 Where either the Community Partnership or the community have concerns about the siting process, the Community Partnership, including RWM should make all attempts to address these concerns before considering withdrawing from the process. In this situation RWM could fund independent mediation to ensure concerns are heard, understood and attempts have been made to address them.

91 The decision on whether to withdraw the community will be taken by relevant local authority(ies) on the Community Partnership. Regardless of how many local authorities

are on the Community Partnership a relevant local authority can remove the community council areas within its boundaries from the siting process by leaving the Community Partnership or enacting the Right of Withdrawal.

92 The relevant local authority(ies) may decide to seek the views of the community on whether to withdraw from the process. The Welsh Government considers it would be best practice to consult the community on the question of whether to withdraw. If the relevant local authority(ies) decide they wish to consult the community then the decision on how they seek views would be a decision taken by the entire Community Partnership and should be set out in the Community Agreement. The method chosen to seek views could be either a local referendum, a formal consultation or statistically representative polling. If new methods of consultation emerge in the future the Community Partnership may wish to consider a different approach.

93 If the relevant local authority(ies) decides to seek the views of the community on whether to withdraw from the process it would be residents of the Search Area (as set out in paragraphs 25-30) that would participate or the residents of the Potential Host Community (as set out in paragraphs 83-87) if it had been identified by the time withdrawal was being considered.

94 RWM can also withdraw from the process. It could withdraw for technical reasons or other reasons which demonstrated there were no longer prospects of finding a suitable site within either the Search Area or Potential Host Community. RWM could also withdraw in order to prioritise available funds across other communities in the siting process. RWM will be transparent in its considerations to withdraw from a community.

Test of Public Support

95 Before RWM seeks regulatory approval and planning permission to site a GDF in a particular community, there must be a Test of Public Support to determine whether the community is willing to host a GDF.

96 The relevant local authority, or authorities where there is more than one, on the Community Partnership will take the decision on if or when to hold a Test of Public Support. A relevant local authority must agree that the Test of Public Support can take place in order for the community council areas within its boundaries to be included in the test. As set out in paragraph 45 the Community Partnership will take a view on what mechanisms could be used for the Test of Public Support.

97 The Test of Public Support is designed to determine a final view from the community as to whether they are willing to host a GDF within their community. If the result of the Test of Public Support is positive, RWM may then proceed with statutory licensing, environmental permitting and planning permission application processes to build a GDF. Without a positive Test of Public Support RWM will not be able to seek regulatory

approval and planning permission for a GDF and the siting process will end in that community.

98 The Test of Public Support will be carried out in the Potential Host Community. As with the Right of Withdrawal, there are currently three main mechanisms that could be used for the Test of Public Support: a local referendum, a formal consultation or statistically representative polling. If new methods to test public opinion emerge in the future, the Community Partnership may wish to consider a different approach.

99 RWM will produce guidance which will set out in more detail how the Test of Public Support could potentially operate, but it will be for the Community Partnership to decide how it wishes to approach it. Whatever approach is adopted, it is important that the Community Partnership carries out the Test of Public Support in a way that is fair and robust. The cost of carrying out the Test of Public Support will be funded by RWM.

100 The Test of Public Support would only be taken after extensive community engagement when the community has had time to ask questions, raise any concerns and learn about a GDF. There will be only one opportunity for a Test of Public Support in each Potential Host Community. However, the Welsh Government expects the Community Partnership to monitor public opinion throughout the process and as discussed in paragraphs 88-94 the community may be withdrawn from the process at any time.

101 The Right of Withdrawal will cease following the Test of Public Support once it has been established that the community is willing to host a facility, and RWM, has identified a preferred site. RWM, subject to the Secretary of State's agreement, will proceed with applications for the relevant planning and regulatory consents required for the construction and operation of a GDF.

102 The planning permission application and the applications that RWM makes for various permits and licenses are likely to involve further elements of public participation. This means that members of the Community Partnership, the Potential Host Community and any other member of the public or organisations that have an interest, will have further opportunities to offer their views after a positive Test of Public Support.

103 The Working with Communities framework covers the process of community engagement up until the Test of Public Support. After this point the Community Partnership may then transition into a liaison group to provide an enduring interface between RWM and the local community during the planning permission process, the regulatory permitting and licensing processes and through to the construction, operation and closure of the facility.

15

Appendix 4

Radiological protection standards and their application to radioactive substances activities

1. The UK Government and devolved administrations have taken account of international[113,114] and national[115] recommendations in setting radiological protection standards for the management of radioactive substances. This ensures that individual members of the public are not exposed to unacceptable risks.

2. These standards apply only to exposure of the public; they do not apply to occupational exposures or medical exposures. They apply to all radioactive substances activities authorised[116] by the UK's regulators.

3. These activities range from the dispensing of radiopharmaceuticals in hospitals, the inspection of welds in engineering, the operation of nuclear sites, to the management of radioactive waste at disposal sites.

4. We also require operators to apply the optimisation principle at all stages of their activities involving radioactive substances, so that radiation exposures and the likelihood of them occurring are kept as low as reasonably achievable, taking into account environmental, economic and social factors.

[113] International Commission on Radiological Protection (2007) The 2007 Recommendations of the International Commission on Radiological Protection. ICRP Publication 103. Available at: https://www.icrp.org/publication.asp?id=ICRP%20Publication%20103

[114] International Atomic Energy Agency (2014) Radiation protection and safety of radiation sources: International Basic Safety Standards. IAEA General Safety Requirements Part 3. Available at: https://www.iaea.org/publications/8930/radiation-protection-and-safety-of-radiation-sources-international-basic-safety-standards

[115] Health Protection Agency (2009) Application of the 2007 recommendations of the ICRP to the UK. Advice from the HPA. HPA RCE-12. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335097/RCE-12_for_website_v2.pdf. Note: The Health Protections Agency's functions have now moved to UK Health Security Agency.

[116] "Authorised" is being used in a broad sense to cover any form of licence, permit or registration issued by a regulator, or notification, exemption or general binding rule complied with by an operator.

5. These standards and the principle of optimisation should be applied by operators at the planning and authorisation application stages for any radioactive substances' activity, and by regulators before they issue or accept the surrender of any authorisation.

Public annual dose limits from all controlled and authorised sources of radiation

6. We specify a 1 mSv limit on doses that can be received in a year by any member of the public from all controlled and authorised sources of radiation. We also specify a dose limit of 15 mSv in a year for exposures of the lens of the eye and 50 mSv for exposures to the skin.

Normal operation during authorisation of all radioactive substances activities

7. To ensure the annual dose limits can be met, operators must be appropriately authorised for the radioactive substances activities they wish to undertake. To restrict radiation exposure from the normal operation of a defined source, and to place a ceiling on optimised exposures, we require the regulators to have regard to dose constraints when authorising radioactive substances activities.

8. While the appropriate authorisations for a radioactive substances activity are in place, we require that exposures to the public from any single authorised source should not exceed a dose constraint of 0.3 millisieverts (mSv) per year. This constraint applies to all exposures due to operational discharges to the air, to watercourses, or to waterbodies. It also applies to direct radiation exposures from facilities on nuclear sites or radioactive waste disposal facilities,

9. We also require that the aggregated exposures to the public from a group or cluster of authorised sources of radiation should not exceed the site related dose constraint of 0.5 millisieverts (mSv) per year. This constraint applies to the combined exposures from, for example, two or more neighbouring but separately authorised, nuclear sites.

10. These dose constraints continue to apply to radioactive waste disposal sites (including landfill sites and specialised radioactive disposal facilities) and to decommissioning nuclear sites during the period after radioactive substances activities, such as waste disposal or clean-up, have ceased, and while an environmental permit remains in place. During this period, monitoring and surveillance at the sites must continue to ensure the protection of people and the environment, until the relevant environment agency has agreed the operators' permit can be surrendered.

Disposal sites and decommissioned nuclear sites after surrender of environmental permit

11. When an operator eventually surrenders the permit for a closed disposal site or a decommissioned and cleaned-up nuclear site, some radioactive waste or contamination may remain in the ground. This means that there is the potential for the exposure of people and the environment to radioactive substances in the future.

12. We require that the risks from such potential exposures, which may or may not happen, satisfy additional criteria, which we have established to protect future generations. Before an operator can be allowed to surrender their permit, they must assess the residual risks to people and the environment, and they must demonstrate to the relevant environment agency that the public are protected from unacceptable risks.

13. In their planning for the eventual surrender of the environmental permit for their site, operators must take all reasonable and practicable measures to protect people from potential exposures so that after permit surrender the risks to the public of a fatal cancer or heritable defect do not exceed a risk constraint of one in one hundred thousand per year.[117,118]

14. Furthermore, to account for uncertainties inherent in exposure projections far into the future, operators should seek to achieve a risk guidance level of one in one million per year. This will give confidence that the risk constraint in paragraph 13 above can be met.

15. This risk guidance level applies to all potential exposures that might occur due to processes and events affecting a site, in the course of its expected natural evolution after permit surrender.

16. However, the risk guidance level cannot be applied to all potential exposures.[119,120] Such potential exposures could include people coming into direct contact with

[117] Health Protection Agency (2009) Application of the 2007 recommendations of the ICRP to the UK. Advice from the HPA. HPA RCE-12. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335097/RCE-12_for_website_v2.pdf Note: The Health Protections Agency's functions have now moved to UK Health Security Agency.

[118] Health Protection Agency (2009) Radiological Protection Objectives for the Land-based Disposal of Solid Radioactive Wastes: Advice from the Health Protection Agency. HPA RCE-8. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335110/RCE-8_for_web_v2.pdf Note: The Health Protections Agency's functions have now moved to UK Health Security Agency.

[119] International Commission on Radiological Protection (1998) Radiation Protection Recommendations as Applied to the Disposal of Long-lived Solid Radioactive Waste. ICRP Publication 81. Available at: https://www.icrp.org/publication.asp?id=ICRP%20Publication%2081

[120] International Atomic Energy Agency (2011) Disposal of radioactive waste: International Basic Safety Standards. IAEA Safety Standards Series No. SSR-5. Available at: https://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf

radioactive substances if external influences adversely affected the protective measures at a site.

17. Where the risk guidance level cannot be applied, operators must ensure that, after permit surrender, potential exposures do not exceed a dose guidance range of around 3 mSv per year (for exposures lasting more than one year) to 20 mSv (for exposures of one year or less).[121]

18. The dose guidance range restricts the consequences to people if intrusion or disruption were to impair the measures an operator has taken to contain radioactive substances remaining in the near-surface environment at a site. It ensures that, in the event of the unexpected, future generations will be protected to the same levels that are considered acceptable under similar circumstances now.[122,123]

[121] Health Protection Agency (2009) Radiological Protection Objectives for the Land-based Disposal of Solid Radioactive Wastes: Advice from the Health Protection Agency. HPA RCE-8. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/335110/RCE-8_for_web_v2.pdf Note: The Health Protections Agency's functions have now moved to UK Health Security Agency.

[122] International Commission on Radiological Protection (1998) Radiation Protection Recommendations as Applied to the Disposal of Long-lived Solid Radioactive Waste. ICRP Publication 81. Available at: https://www.icrp.org/publication.asp?id=ICRP%20Publication%2081

[123] International Atomic Energy Agency (2011) Disposal of radioactive waste: International Basic Safety Standards. IAEA Safety Standards Series No. SSR-5. Available at https://www-pub.iaea.org/MTCD/publications/PDF/Pub1449_web.pdf

Glossary

Becquerel (Bq) - The standard international unit of radioactivity equal to one radioactive decay per second.

Best Available Techniques (BAT) - The available techniques which are the best for preventing or minimising emissions and impacts on the environment. In England and Wales, BAT has replaced Best Practical Means (BPM)and Best Practicable Environmental Option (BPEO) for the regulation of radioactive discharges. BPM and BPEO continue to be used in Scotland and Northern Ireland.

Best Practicable Means (BPM) - Level of management and engineering control that minimises, as far as practicable, the release of radioactivity to the environment whilst taking account of a wider range of factors, including cost-effectiveness, technological status, operational safety, and social and environmental factors.

Best Practicable Environment Option (BPEO) - An option decided following a systematic and consultative decision-making procedure which emphasises the protection and conservation of the environment across land, air, and water. The BPEO procedure establishes, for a given set of objectives, the option that provides the most benefit or least damage to the environment as a whole, at acceptable cost, in the long term as well as in the short term.

Decay storage - Interim storage for the purposes of taking advantage of radioactive decay.

Development Consent Order (DCO) - The planning consent given by the relevant Secretary of State for a nationally significant infrastructure project.

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.

Environmental permit or authorisation - Permission granted by the relevant environmental regulator in England or Wales to allow an operator to carry out certain activities, subject to conditions and limits on discharges to the environment. In Scotland, the equivalent is referred to as an environmental authorisation.

Graded approach - Graded approach is the term used by the IAEA to describe proportionate regulation. It is a structured method by which the stringency of regulatory control is commensurate with the risk associated with a loss of control.

Ionising radiation - Any type of particle or electromagnetic wave that carries enough energy to directly or indirectly remove electrons from an atom (i.e. ‘ionise’ the atom).

National Policy Statement - A statement that provides guidance to the Planning Inspectorate and Secretary of State on assessing and deciding on development consent applications for a particular type of infrastructure.

Nuclear materials - Nuclear materials principally include uranium and plutonium.

Potential Host Community - The Potential Host Community is the community within a geographical area that could potentially host a Geological Disposal Facility (GDF).

Proximity principle - This principle requires that waste should generally be dealt with as near to the place of production as possible.

Radioactive materials - Materials that produce ionising radiation not including radioactive waste.

Radioactive source - Radioactive material which is used for the purpose of using its radioactivity

Radioactive substances - The term includes radioactive materials that are in use, as well as radioactive waste.

Radioactive waste - Any material that is either radioactive itself or is contaminated by radioactivity above certain thresholds defined in legislation and for which no further use is envisaged.

Radionuclides - An unstable form of a chemical element that radioactively decays, resulting in the emission of nuclear radiation. Also called a radioisotope.

Regulatory requirements - Requirements set out in published guidance on the standards that a developer or operator would need to meet to be granted an environmental permit or a nuclear site licence. Regulatory requirements are also included as conditions in environmental permits and a nuclear site licence; a developer or operator must comply with such conditions.

Reprocessing - A physical or chemical process which separates spent nuclear fuel into its component parts.

Right of Withdrawal - With respect to the policy on implementing geological disposal - the ability for a community or the developer, Radioactive Waste Management Ltd (RWM) to withdraw from the siting process.

Self-sufficiency - This principle requires that most waste should be treated or disposed of within the region in which it is produced.

Sham recovery - This is an operation that purports to recover reusable material but amounts to waste disposal.

Sievert - A unit of radiation dose. It can be used to assess the risk of biological harm to body's tissues from a given dose.

Site licence - Nuclear sites require a licence in order to operate under the Nuclear Installations Act 1965. ONR is required to attach licence conditions to the nuclear site licence which identify matters of safety which the licensee must address through implementing adequate arrangements.

Spent fuel - Nuclear fuel removed from a reactor following irradiation that is no longer usable in its present form because of depletion of fissile material, poison build-up or radiation damage.

Storage - The emplacement of waste in a suitable facility with the intent to retrieve it at a later date.

Sustainable development - Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.

Test of Public Support - A mechanism to establish whether residents of the Potential Host Community support the development of a GDF within their community.

UK Radioactive Waste Inventory (UKRWI) - The latest national record of radioactive wastes and materials in the UK. It is updated every 3 years. It is a snapshot of wastes and materials at a specific point in time, called the ‘stock date’.

Waste hierarchy - The waste hierarchy ranks management options according to the best outcome for the environment. It gives priority to preventing the creation waste in the first place. When waste is created, it gives priority to preparing it for re-use, then recycling, then recovery, and last of all disposal.

List of Abbreviations

AGR – Advanced Gas-Cooled Reactor

ALARA – As low as reasonably achievable

ALARP – As low as reasonably practicable

AMR – Advanced Modular Reactor

BAT – Best Available Techniques

BEIS – Department for Business, Energy and Industrial Strategy

BEPPS – Box Encapsulation Plant Product Store

BPEO – Best Practicable Environment Option

BPM – Best Practicable Means

CEFAS – Centre for Environment, Fisheries and Aquaculture Science

COMARE – Committee on Medical Aspects of Radiation in the Environment

CONTEST – UK's Strategy for Counter Terrorism

CoRWM – Committee on Radioactive Waste Management

CTSA – Counter Terrorism Security Advisers

DNSR – Defence Nuclear Safety Regulator

DSSC – Disposal System Safety Case

DESNZ – Department for Energy Security and Net Zero

EA – Environment Agency

FDP – Funded Decommissioning Programme

FSA – Food Standards Agency

FSS – Food Standards Scotland

GDA – Generic Design Assessment

GDF – Geological Disposal Facility

HASS – High Activity Sealed Sources

HAW – Higher Activity Waste

HGV – Heavy goods vehicle

HLW – High level waste

HSE – Health and Safety Executive

IAEA – International Atomic Energy Agency

ICRP – International Commission on Radiological Protection

ILW – Intermediate level waste

LLW – Low level waste

LLWF – Low Level Waste Facility

LLWR – Low Level Waste Repository

MOX – Mixed Oxide Fuel

NaCTSO – National Counter Terrorism Security Office

NDA – Nuclear Decommissioning Authority

NEA – Nuclear Energy Agency

NIEA – Northern Ireland Environment Agency

NLF – Nuclear Liabilities Fund

NORM – Naturally occurring radioactive material

NRW – Natural Resources Wales

NSD – Near surface disposal facility

NSS – IAEA Nuclear Security Series

OECD – Organisation for Economic Cooperation and Development

ONR – Office for Nuclear Regulation

OSPAR – Convention for the Protection of the Marine Environment of the Northeast Atlantic

PWR – Pressurised Water Reactor

RWM – Radioactive Waste Management Ltd.

SCA – Source Collection Agency

SDGs – Sustainable Development Goals (of which there are 17)

SEPA – Scottish Environment Protection Agency

SMR – Small Modular Reactor

SPRS – Sellafield Product and Residue Store

SRP – Sellafield Product and Residues Store Retreatment Plant

SSAC – UK State System of Accountancy and Control of Nuclear Materials

THORP – Thermal Oxide Reprocessing Plant

UKAEA – UK Atomic Energy Agency

UKRI – UK Research Institute

UKRWI – UK Radioactive Waste Inventory

VLLW – Very low-level waste

WAC – Waste Acceptance Criteria

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