

GDF



# Site Evaluation

How we will evaluate sites in England



Nuclear Waste  
Services

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# An Overview to Site Evaluation

## Our approach to finding a suitable site for a Geological Disposal Facility

Thank you for taking the time to read our Site Evaluation document. We hope we can guide you through our approach to finding a suitable site for a **Geological Disposal Facility (GDF)**.

Developing and constructing a GDF is one of the most important environmental projects of our generation.

There is a pressing need to commit to a safe and secure long-term solution for the UK's **higher activity radioactive waste** and there is international consensus that geological disposal, where this waste will be placed deep underground, is the right thing to do for today's society and for future generations. Countries including Canada, Sweden and Finland are already well on their way to building their own GDFs.

Transparency with communities is fundamental to build confidence in what we do. We have learned from our international partners, and from lessons of the past, and are committed to engaging and consulting with people throughout the process of identifying and selecting a site for a GDF. The best way we can build confidence is to prove we are listening and responding to what people tell us.

## Consulting on our approach

From the very beginning, we invited feedback on our proposed approach to evaluating sites for a GDF. We prepared draft versions of our Site Evaluation documents where we set out our proposals, and then we carried out public consultations in England and Wales.

The consultation on our draft Site Evaluation document in England ran from the 19th December 2018 to the 31st March 2019. We talked to people with a variety of interests about how we proposed to evaluate sites, via a programme of regional events and we will continue to engage with people.

We completed an analysis of all the responses we received to inform further development of our Site Evaluation documents. We have produced a **Consultation Response Document (CRD<sup>1</sup>)** to summarise what we heard and what actions we have taken.

This Site Evaluation document was developed in response to the feedback we received, and we are very grateful to all those who took part in our consultations.



*There is a pressing need to commit to a safe and secure long-term solution for the UK's radioactive waste.*

<sup>1</sup> Site Evaluation - Consultation Response



## Government policy, and our role

In December 2018, the UK Government published its updated policy **framework on geological disposal**, setting out a process for working in partnership with communities. The Welsh Government published its equivalent policy on **Working with Communities** in January 2019.

The policy frameworks in both England and Wales describe us as the delivery organisation for geological disposal. We are a wholly-owned subsidiary of the **Nuclear Decommissioning Authority (NDA)** and we will be responsible for the siting, construction, operation and eventual closure of a GDF. Both policy frameworks establish a consent-based approach which puts communities at the heart of the siting process.

*Geological disposal is internationally recognised as the responsible solution, for generations long into the future.*

## Purpose of our Site Evaluation documents

We have produced two Site Evaluation documents – one for England, and one for Wales. The documents explain the relevant legal and policy frameworks, and show how we will apply these frameworks consistently and transparently. These documents also explain how we will structure evaluations using a series of Siting Factors and Evaluation Considerations during the siting process. Our evaluations will focus on whether identified areas and sites may be suitable to host a GDF.

The Site Evaluation documents have been designed to summarise, in plain and accessible terms, what we will need to consider during the siting process to ensure we meet and satisfy all relevant **Requirements** and enable us to gather the necessary information to make applications for the consents that will be needed to investigate an area and subsequently, construct, operate and close a GDF.

The Site Evaluation documents do not themselves establish a binding framework for the siting of a GDF, nor do they establish any new Requirements to be applied during the siting process or remove, enhance or alter any existing Requirements. They simply draw upon the existing Requirements in a manner that is designed to ensure that the relevant legal and policy frameworks are applied consistently and transparently throughout the siting process.

The Site Evaluation documents do not set out how we should or will apply the Requirements in practice and do not set the standards or benchmarks that need to be achieved because these standards and or benchmarks are (where appropriate) already set by the underpinning Requirements.

We have divided this document, which applies in England, into the following sections:

- In **Section 1** we introduce the background to this document.
- In **Section 2** we look at the requirements we must satisfy, and discuss how they have informed our choice of a series of Siting Factors and Evaluation Considerations.
- In **Section 3** we explain how we will structure our evaluations using Siting Factors and Evaluation Considerations.
- In **Section 4** we describe how we will implement UK Government's siting process.
- In **Section 5** we explain how we will undertake assessments and evaluations of areas and sites and undertake comparative evaluations between different sites, where necessary.
- In **Section 6** we discuss how our work will be subjected to oversight and scrutiny.

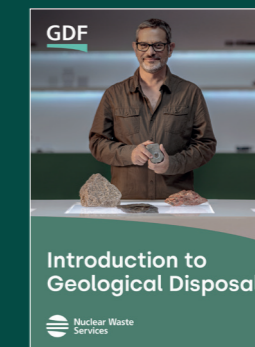
At the back there is a **Glossary** and two **Annexes**, which provide additional details on various matters discussed in this document.

## Further resources

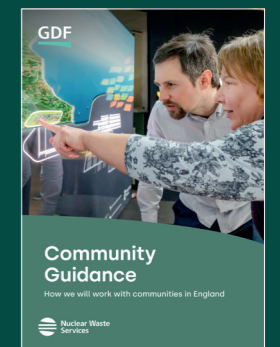
This document is focused on the evaluation of potential areas and sites during the siting process, which is just one strand of our work. We recognise that there is a need for much wider information to be available on our work and the development of a GDF, so we have included references and links throughout this document.

### Relevant documents

We recommend that you read this document alongside our other published documents, "**Introduction to Geological Disposal**" and "**Community Guidance**". These provide helpful information about our mission and how we will work with communities. Simply click on the web links or **call us** and ask for printed copies.



Introduction to Geological Disposal



Community Guidance

### Visit our website

There is a wealth of information and resources available on our website

**www.nuclearwasteservices.uk**

including links to other useful sources of information, such as the UK Government's policy on geological disposal and guidance published by the independent regulators.



## Site Evaluation



Surface facilities at Aspo Hard Rock Laboratory, Sweden (picture from SKB)

## Background

### Why do we need a GDF?

Nuclear power provides us with one fifth of the UK's electricity, and it's been a part of our energy mix for more than 60 years. The UK has been a pioneer of nuclear technology, from military to medical research, to industrial, and as a result has accumulated a legacy of higher activity radioactive waste and nuclear material. More waste will be produced as existing facilities reach the end of their lifetime and are decommissioned and cleaned up, and through the operation and decommissioning of new nuclear power stations.

### A world class solution

There is international consensus that a GDF is the best permanent solution for the management of higher activity radioactive waste. It is currently stored on an interim basis above ground where it is secure and safe, but this is not a sustainable long-term solution.

Isolating radioactive waste deep underground in solid rock is already the chosen approach in many countries internationally and is widely regarded as the responsible solution for the protection of future generations and the environment.

### What kind of waste goes into a GDF?

The wastes that will be disposed of in a GDF are referred to as the 'inventory for disposal'. The types and amounts of waste that make up this inventory for disposal are important because the layout and design of any GDF will need to be tailored to them, and also because it is recognised that communities considering hosting a GDF will want to be clear about what wastes are destined for it.

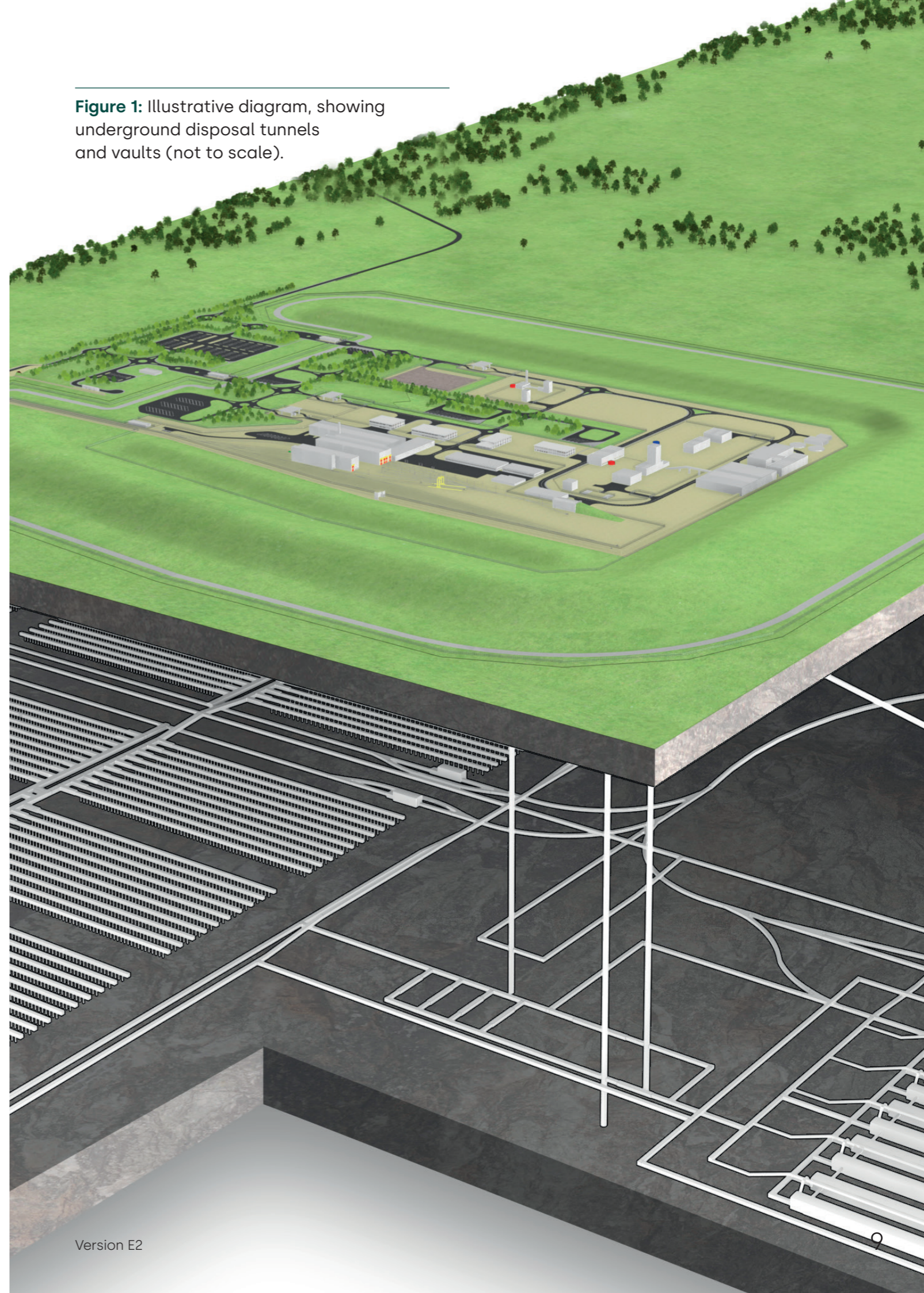
There are also some radioactive materials that are not currently classified as waste, but would, if it were decided at some point that they had no further use, need to be managed as wastes through geological disposal. These include spent fuel (including spent fuel from new nuclear power stations), plutonium and uranium.

### What will a GDF look like?

A GDF will be a significant piece of UK infrastructure – but the majority of the facility will be up to 1,000 metres underground. On the surface, a GDF will take up an area of about one square kilometre.

A GDF is a highly engineered facility that uses multiple barriers to ensure that hazardous materials are kept away from people and the environment. It does this by isolating and containing the waste in a suitable geological environment for the time required for the radioactivity associated with it to reduce naturally.

**Figure 1:** Illustrative diagram, showing underground disposal tunnels and vaults (not to scale).





**The siting process: a consent-based approach involving communities from the start**

The UK Government's **Working with Communities** policy establishes a consent-based approach for us to engage and work in partnership with communities and **relevant principal local authorities** in England for the purposes of identifying suitable locations with a willing community for the development, operation and closure of a GDF. This is referred to as the siting process<sup>2</sup>, and is discussed in further detail in **Section 4**.

The process of finding and confirming the suitability of a site is expected to take several years. The relevant development consents and permissions from the independent regulators, that need to be obtained before construction of a GDF can start, can only be applied for following a positive **Test of Public Support**.

*In line with Government Policy siting a GDF requires both a willing community and suitable site.*

**Will there be more than one site?**

The UK Government is currently proceeding on the assumption that only one GDF will be necessary. However, as we have not yet started actual site investigations, there is no guarantee we will find a site with a large enough volume of suitable rock to take the entire inventory for disposal in one place, or that we would be able to make a safety case for the entire inventory at such a site.

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.

**Territorial extent**

Radioactive waste management is a devolved matter, meaning that each of the individual devolved administrations in the United Kingdom has responsibility for setting its own policy.

This document covers England only.

In England, the overarching policy framework for the implementation of the geological disposal programme is set out in **Implementing Geological Disposal – Working with Communities, An updated framework for the long-term management of higher activity radioactive waste**.

As radioactive waste management is a devolved matter, we have produced a separate **Site Evaluation document for Wales**<sup>3</sup> to reflect the different policy and legislative framework that exists. This, along with the policy position in Northern Ireland and Scotland, is explained further in **Annex A** of this document.

<sup>2</sup> A summary of the siting process can be found in paragraphs 2.5 to 2.18 of this document. Further information can be found in the Working with Communities Policy, in particular chapter 6.

<sup>3</sup> Site Evaluation - How we will evaluate sites in Wales



## Section 2

# Addressing the Requirements

There are a large number of requirements derived from legislation, certain policy documents and guidance that we will need to satisfy to successfully investigate potential areas and sites, construct, operate and close a GDF as well as requirements that relate to the period after closure.

This document contains a summary of the types of issues that we will need to consider during the siting process in order to satisfy all relevant requirements. Three important sources of requirements have been identified:

- **Legal and Other Requirements**
- **Siting Process Requirements**
- **Land use Planning Requirements**

Together we refer to the Legal and Other Requirements, Siting Process Requirements and Land use Planning Requirements as the '**Requirements**'.

In this section we go into each of these in more detail.

### Legal and Other Requirements

- 2.1.** Throughout the siting process, and for the purposes of investigating, constructing, operating and closing a GDF, we will need to comply with a number of legislative/regulatory requirements including both domestic and European/International, as well as any relevant associated guidance regarding those regimes, which relate to the design and assessment, construction, operation and closure of a GDF. This includes requirements derived from, for example; Environmental Permitting Regulations, Nuclear Industry Security Regulations, and the Energy Act, amongst many others.
- 2.2.** As well as legislative requirements there are other requirements from the **NDA client specification**, which is designed to ensure that we can meet the needs of waste producers.
- 2.3.** There are a range of national strategies and plans with the aim of achieving better environmental outcomes, for example the **Defra 25-year Environment Plan** and the BEIS **Clean Growth Strategy**. These strategies and plans and any related policies may need to be taken into account in our assessments and evaluations of potential areas and sites.
- 2.4.** Delivering a GDF will include securing a number of consents, such as those from planning authorities and the UK's independent nuclear and environmental regulators. The key legal requirements in the context of such consents relate to:
  - Environmental Impact Assessment; a detailed environmental statement will be produced supported by a project level assessment to be carried out by ourselves as part of our applications for development consent under the Planning Act 2008;
  - Habitats Regulations Assessment; a detailed project level assessment to be carried out by ourselves, which assesses the potential impact (if any) of proposed GDF development on protected habitats and species;
  - A Nuclear Site Licence for a GDF, granted by the Office for Nuclear Regulation (ONR) under the Nuclear Installations Act 1965;
  - Nuclear Industry Security Regulations 2003, which require the production and approval of certain security plans; and
  - Environmental Permit(s), used to regulate certain environmental aspects of a development, granted by the Environment Agency (EA) under the Environmental Permitting (England and Wales) Regulations 2016.





*We will work together in partnership with communities to identify and select a suitable site.*

Figure 2: Overview of Siting Process



**Siting Process Requirements**

- 2.5. The process to identify and select a site for a GDF could take a number of years. Figure 2 is a summary of the siting process. It identifies the key activities that will combine to deliver a successful process. The siting process is discussed further in **Section 4**.
- 2.6. The Siting Process Requirements are derived from the UK Government's **Working with Communities policy**, which sets out how we will work in partnership with interested parties, communities and the principal local authorities that represent those communities, in order to identify a suitable site for the development of a GDF.
- 2.7. The Working with Communities policy explains that discussions on a proposed location for a GDF can be initiated by anyone or any group of people with an interest in the siting process – the **Interested Party** - and who wish to propose an area for consideration. These early conversations are called **Initial Discussions**.
- 2.8. Once we and the interested party have had an initial exchange of information and agree that the proposal merits further consideration, all relevant principal local authorities must be informed and the discussion opened up more widely in the community.
- 2.9. The relevant principal local authorities are the district, county or unitary authorities that represent all or part of the area under consideration. In order to begin a conversation with the people in the area, the interested party, ourselves, an independent chair and an independent facilitator will form a **Working Group**.



- 2.10.** The Working Group will identify the geographical area within which we will seek potentially suitable sites for a GDF. This is called the **Search Area**. All relevant principal local authorities must be invited to join the Working Group, but it can still proceed in their absence.
- 2.11.** The Working Group will start to gather information about the people and organisations in the area that are likely to be affected or have an interest in a GDF with a view to identifying members for a formal **Community Partnership**.
- 2.12.** This Community Partnership will include community members, organisations, ourselves and at least one relevant principal local authority. It will provide a vehicle for sharing information with the community and for finding answers to the questions the community may have about geological disposal, the siting process and how they, as a community, could benefit.
- 2.13.** In order for the Community Partnership to form and operate, at least one relevant principal local authority must agree to participate.
- 2.14.** A community can withdraw from the siting process at any time up until it has taken a **Test of Public Support**; this is called the **Right of Withdrawal**. The decision on whether to withdraw the community will be taken by the relevant principal local authority, or authorities where there is more than one, on the Community Partnership. Where there is more than one relevant principal local authority on the Community Partnership, all must agree; no single relevant principal local authority will be able to unilaterally invoke the Right of Withdrawal.
- 2.15.** **We** can also choose to withdraw from the process at any time. For example, we could withdraw for technical reasons or other reasons which demonstrated there were no longer prospects of finding a suitable site within the Search Area or within the **Potential Host Community**. We could also withdraw in order to prioritise available funds across other communities in the siting process. We will be transparent in our considerations to withdraw from a community.

- 2.16.** Before a decision is made to seek development consent from the Secretary of State to construct a GDF (or regulatory approvals for a GDF from the Environment Agency and the Office for Nuclear Regulation), there must be a Test of Public Support by the Potential Host Community to demonstrate it is willing to host a GDF.
- 2.17.** Relevant principal local authorities on the Community Partnership will have the final say on when to undertake this Test of Public Support in order to seek the community's views on hosting a GDF. All relevant principal local authorities on the Community Partnership must agree to hold the Test of Public Support for it to go ahead.
- 2.18.** Our **Community Guidance** document explains how we plan to work in partnership with communities throughout the siting process.

*The community will decide whether they want a GDF through a test of public support.*



## Land use Planning Requirements

- 2.19.** The **National Policy Statement** for Geological Disposal Infrastructure (NPS) establishes the planning policy framework within which our applications for development consent for geological disposal infrastructure (in England) will be considered in due course. The Secretary of State must have regard to the NPS when determining **Development Consent Order (DCO)** applications for certain geological disposal infrastructure under section 30A of the **Planning Act 2008**<sup>4</sup>. The NPS covers both the deep boreholes necessary to determine the suitability of a site for a GDF and the construction of a GDF.
- 2.20.** The NPS establishes the need for, and highlights the generic impacts of the proposed development that must be considered when making an application for development consent. It also provides a framework for making development consent applications for geological disposal infrastructure; in particular, setting out what should be included in our assessments of the potential impacts of a particular development and how these should be mitigated.
- 2.21.** The NPS is not a site-specific document. That is, it does not identify specific locations where geological disposal infrastructure should be sited, but rather provides guidance relevant to the generic impacts of geological disposal infrastructure anywhere in England.
- 2.22.** There are a number of matters in the NPS which we will necessarily need to consider in our evaluation of potential sites in England.
- 2.23.** Sections 4 and 5 of the NPS establish a series of Assessment Principles and Impacts that should be considered and assessed when proposing a site for development. Later in the process, our applications for development consent (for both the deep investigatory boreholes and a GDF itself) will need to demonstrate compliance with the NPS, and take into account the Assessment Principles and Impacts identified in the NPS. We will need to ensure that these matters are considered when evaluating areas and sites in order to identify any matters which may prevent a successful application for development consent being made.
- 2.24.** In addition to the NPS the Secretary of State must also have regard to other matters, such as any appropriate marine policy, a **Local Impact Report (LIR)** and any other matters which the Secretary of State considers are both important and relevant when determining an application. The content of the LIR will be determined by the local authority concerned and be focused on how the proposals impact on their area. The LIR does not need to replicate the assessment that we will need to carry out in response to the NPS, rather it should draw on existing local knowledge and experience.
- 2.25.** DCO applications for development consent may also include 'associated development' within the meaning of the Planning Act 2008. Development that does not fall within the definition of geological disposal infrastructure or associated development may require a separate application for planning permission (under the **Town and Country Planning Act**) to a local authority. In such instances the applications would be considered against the relevant adopted development plan for the local authority and other relevant material considerations.
- 2.26.** There may be relevant local development plan policies and local guidance, that a local authority would seek to refer to in an LIR, or use to determine planning applications, which we will need to feed into the assessments and evaluations we undertake.
- 2.27.** It is not possible to identify the local specific requirements that may be relevant in a particular area at this stage, but the **National Planning Policy Framework (NPPF)**<sup>5</sup> has informed the development of this document as it sets out the UK Government's planning policies for England and how these should be applied. The NPPF also provides a framework within which locally-prepared plans for housing and other development, such as waste management development, can be produced.
- 2.28.** This document has been developed to be sufficiently broad, inclusive and flexible such that both national and local matters can be considered under the Siting Factors and Evaluation Considerations we have chosen.

<sup>4</sup> The Planning Inspectorate are the government agency responsible for operating the planning process for Nationally Significant Infrastructure Projects. The Planning Inspectorate examines applications for development consent and makes a recommendation to the relevant Secretary of State, who will make the decision on whether to grant or refuse development consent.

<sup>5</sup> National Planning Policy Framework, Ministry of Housing, Communities and Local Government (February 2019).



*The protection of people and the environment is our absolute priority. Put simply, if a GDF cannot be shown to be safe, it cannot be built.*



### Our Technical Programme

- 2.29.** We have developed and maintain a generic **Disposal System Safety Case (gDSSC)**. The gDSSC documents summarise and present over 30 years of research and development and are revised and updated to reflect the progress with our technical programme that underpins our plans for a GDF. The 2016 gDSSC was published in 2017 and was subject to **regulatory review and scrutiny**.
- 2.30.** The gDSSC is a suite of documents that includes the **Disposal System Specification (DSS)**, illustrative designs and generic assessments that consider the safety and environmental implications of the geological disposal of radioactive waste.
- 2.31.** The gDSSC sets out how a GDF could be designed, constructed operated and closed safely, in compliance with applicable requirements, in a range of geological environments.
- 2.32.** The gDSSC underpins the ongoing process for packaging waste in readiness for future disposal in a GDF. The gDSSC will also support the assessments and evaluations we will carry out and any issue we identify will be fed back into our technical programme to inform our future work.
- 2.33.** The DSS is a key part of the gDSSC. It describes the requirements placed on the disposal system and forms the basis of our existing generic design and assessment work. The underlying Legal and Other Requirements, Siting Process Requirements and Land use Planning Requirements (referred to in this document as the Requirements) are therefore captured, in our published DSS<sup>6</sup>.
- 2.34.** Our DSS is separated into two parts. Part A identifies the high-level external requirements on the disposal system including the activities required to transport, receive and emplace waste packages in a GDF, therefore it includes requirements that go beyond identification of a suitable site. Part B identifies the technical requirements that frame the development of a solution to meet the requirements of Part A.

<sup>6</sup> The DSS will be updated to reflect changes that have taken place since the last update to the DSS, which was completed in 2016.



- 2.35. The requirements set out in Part A of the DSS are not influenced by any particular site, and apply to the overarching consideration of areas or sites which we may evaluate. As such, the relevant requirements identified in Part A of the DSS need to be complied with regardless of the area or site being evaluated. If the requirements cannot be satisfied then it is unlikely that the area or site will be suitable for a GDF. Location specific requirements will be captured in Part B of the DSS in due course.
- 2.36. There is consensus internationally that geological disposal provides a safe long-term management solution for higher activity waste. This is expressed in documents such as the **Joint Convention on the Safety of Spent Fuel Management** and in the International Atomic Energy Agency (IAEA) Safety Standards Series document, **Disposal of Radioactive Waste**.
- 2.37. The IAEA Safety Series does not directly form part of the UK's regulatory regimes, although the UK Government and the UK's independent nuclear and environmental regulators do use them to inform the development and review of their guidance and requirements. We have therefore decided to treat the IAEA safety requirements for radioactive waste as requirements in the DSS because they will necessarily shape our assessment of the suitability of geographical areas and sites – but in the event of any conflict between international standards and UK legislation, the latter will take precedence.

#### What happens if anything changes over time?

- 2.37. Given the long-term nature of this project, it's important that we are able to assess and evaluate potential areas and sites in an evolving manner, rather than in a static and binding way. If the underlying Requirements for a GDF change in the future as we move together through the siting process, we will discuss any proposed changes with communities engaged in the siting process and we will update this document if necessary.



## Section 3

# Site Evaluation - Factors and Considerations

We have used the Requirements we discuss in Section 2, as well as looking at international GDF projects and UK infrastructure projects of similar size and complexity, to identify a series of Siting Factors. The six Siting Factors we have selected set out the broad topic areas that we will need to consider throughout the siting process as we assess and evaluate areas and sites. Our evaluations will consider whether we can meet the relevant Requirements that are applicable to the investigation, construction, operation and closure as well as those that are relevant after closure.

These Siting Factors have then been further broken down into a series of Evaluation Considerations to provide greater clarity in respect of the matters that we will be taking into account.

**Table 1:** Siting Factors

Siting Factor	Description
<b>Safety and Security</b>	Whether the relevant Safety and Security Requirements, including those for safeguarding can be satisfied.
<b>Community</b>	Whether the relevant Community Requirements, including the social and economic implications and community wellbeing can be satisfied.
<b>Environment</b>	Whether the relevant Requirements relating to Environmental matters, including those for Protected Habitats and Species can be satisfied.
<b>Engineering Feasibility</b>	Whether the relevant Requirements relating to Engineering Feasibility, including those for construction, sustainable design, retrievability and the ability to accommodate the inventory for disposal, can be satisfied.
<b>Transport</b>	Whether the relevant Requirements relating to the Transport of waste, people and other materials can be satisfied.
<b>Value for Money</b>	Whether the relevant Requirements relating to delivering Value for Money can be satisfied.



## Siting Factors and Evaluation Considerations

- 3.1.** This document, through the use of its Siting Factors and Evaluation Considerations, is designed to enable:
- a consistent and transparent approach to the assessment of potential areas and sites;
  - an appropriate level of evaluation for each potential area against existing, relevant, Requirements; and
  - support for our future applications for permissions, including land use planning consents, environmental permits and a nuclear site licence.
- 3.2.** The Siting Factors and Evaluation Considerations will not be considered in isolation, and they are designed to be used throughout the siting process to enable us to form a holistic view of the potential to host a GDF.
- 3.3.** To the extent that there is any duplication of, or overlap between, the Siting Factors, this Site Evaluation document does not require that the Requirements be applied or interpreted differently, or in any particular manner. The Siting Factors are simply designed to group the Requirements into broad areas to enable a consistent and transparent approach to the evaluation of potential areas and sites.
- 3.4.** Whilst we have decided on the final Siting Factors and Evaluation Considerations, following a public consultation, it is important to recognise that the matters that are covered in them are derived from the underlying Requirements that we will have to comply with in any event to investigate, construct, operate and close a GDF.
- 3.5.** Together, the Siting Factors and Evaluation Considerations will form the broad structure for our discussions with communities and stakeholders, and also the evaluation reports we will produce. Using the Siting Factors and Evaluation Considerations throughout the siting process will ensure we retain consistency in approach and transparency in our assessments and evaluations.
- 3.6.** It is recognised that the regulatory regimes and current policies (i.e. the Requirements) that we will need to satisfy may change over time. We also acknowledge each geographical location that comes forward will be unique and each community that is related to each location is unique so some Requirements to be satisfied may be applicable in some geographical locations but not in others.

- 3.7.** We also recognise that it is critical that we can respond to the issues that are important to the stakeholders and communities that engage in the siting process. We will need to work collaboratively with communities to understand what is important to them and feed this into our assessments and evaluations.
- 3.8.** We acknowledge that there will be potential uncertainties that will need to be managed as part of the assessments and evaluations and that there is a risk that we may identify issues, at a later stage in the siting process, that suggest a GDF in a particular area may not be deliverable.
- 3.9.** The fundamental question that we will be seeking to answer when undertaking any evaluation is: "Based on the appropriate information available, will we be able to satisfy all of the Requirements necessary to successfully deliver a GDF?"
- 3.10.** The delivery of a GDF would have to be safe, the community would need to be willing and the development must not generate an unacceptable environmental impact and also represent value for money, otherwise we would not be able to satisfy the relevant Requirements. When carrying out our evaluations we have to balance a number of different but interrelated and potentially conflicting matters that will be unique to each of the communities engaged in the siting process.
- 3.11.** This document, and in particular the Siting Factors and Evaluation Considerations, have been developed to be suitably resilient to potential changes in Requirements yet flexible enough to respond to differences in locations and communities such that they will remain relevant and enduring throughout the siting process.
- 3.12.** In order to help focus our assessments and evaluations, and the discussions with communities further, particularly when they become more detailed later in the siting process, we have used the Requirements to identify a number of Evaluation Considerations which underpin each of the Siting Factors.
- 3.13.** Table 2 to Table 7 set out the Evaluation Considerations that we have developed for each of the six Siting Factors. To aid transparency and clarity in **Annex B** we have included some illustrative examples of typical matters that are likely to need to be considered under each of the Evaluation Considerations so as to ensure we can satisfy all relevant Requirements.
- 3.14.** The examples provided in Annex B are not an exhaustive list of the matters we will need to assess in order to comply with the underlying Requirements. This is because the specific matters that will require assessment will depend on each specific location.



**Safety and Security**

- 3.15. If we cannot demonstrate that a GDF will be safe and secure, and that the facility will satisfy the UK's strict safety and security standards, it cannot be built.
- 3.16. The Evaluation Considerations within the Safety and Security Siting Factor cover both nuclear safety as well as non-nuclear, or conventional, safety. The Evaluation Considerations under this Siting Factor also cover security and safeguards.
- 3.17. The geological environment will form a critical input into the assessments under the Safety and Security Siting Factor, in particular the "Safety after Closure Evaluation Consideration" given the key role that geology has as part of the multi barrier system.
- 3.18. The geological environment is an issue that will also be considered and influence a number of other Siting Factors and Evaluation Considerations. It will, for example, be of fundamental importance in the context of engineering (how a GDF should be constructed in a given geological environment) and our selection of appropriate engineered barriers, and will influence a number of other matters such as the type and nature of spoil produced, which could in turn influence transport.
- 3.19. In our assessments we will draw on the information available to us from the **National Geological Screening (NGS)** exercise, and in particular consider the key geological attributes the NGS uses. The NGS indicates where rock with the appropriate geological attributes can be found by bringing together existing information on: rock type, rock structure, groundwater, natural processes and resources. More information on this important matter can be found **on our website**.
- 3.20. We will need to develop an **environmental safety case** as part of any proposal to develop a GDF. The operator of such a facility also needs to have an environmental safety case, properly updated. The environmental safety case will need to demonstrate to the independent regulators that members of the public and the environment are adequately protected, both at the time of disposal and over the long term into the future.
- 3.21. To obtain a nuclear site licence for a GDF, we will need to develop a **nuclear safety case** that is specific to the facility that we are seeking a licence for. The nuclear safety case will document the scientific evidence and presents the arguments as to why geological disposal can be achieved safely. Making a nuclear safety case is a central component to the nuclear site licensing process.

**Table 2:** Evaluation Considerations for the Siting Factor – Safety and Security

Evaluation Consideration	Description
Safety during Investigation	The ability to investigate areas and sites safely within the constraints of the area / site and the long term implications of those investigations.
Safety during Construction	The ability to build a GDF safely and the long term implications of that construction.
Safety during Operations	The ability to operate a GDF safely and the long term implications of that operation.
Safety after Closure	The ability to isolate and contain radioactive waste for the time required for the radioactivity to naturally reduce to acceptable levels.
Management Requirements	The ability to satisfy the relevant administrative Requirements within the constraints of the area / site.
Security	The ability to design, construct, operate and close a GDF such that the relevant security Requirements are satisfied.
Safeguards	The ability to design, construct, operate and close a GDF such that the relevant safeguarding Requirements are satisfied.

- 3.22. For the avoidance of doubt, non-radioactive or "conventional" environmental impact is dealt with under the Environment Siting Factor and transport safety, including the **transport safety case** we will need to develop, and transport security, is dealt with under the Transport Siting Factor.
- 3.23. Examples of the typical matters we may assess under the Evaluation Considerations for the Safety and Security Siting Factor in order to comply with the underlying Requirements are set out in **Table A** of Annex B.





## Community

**3.24.** Within this Siting Factor we will consider such matters as the impact on the wellbeing of the community if it were to host a GDF, along with social, economic and health impacts and opportunities. Some typical examples of the matters that we may assess in order to comply with the underpinning Requirements are set out in **Table B** of Annex B.

**3.25.** Our assessments under the Community Evaluation Considerations will need to respect relevant plans, strategies and policies that may relate to an area, such as local economic plans or local development plans.

**3.26.** The assessments relating to economic matters will take into account potential economic benefits as well as disbenefits. We will also consider topics such as the availability of a potential workforce and any training needs which may support the use of a local workforce.

**Table 3:** Evaluation Considerations for the Siting Factor - Community

Evaluation Consideration	Description
Community Wellbeing	The implications of the investigation, construction, operation and closure of a GDF on the wellbeing of the community that may be affected.
Social	The implications of the investigation, construction, operation and closure of a GDF on the social conditions of the community that may be affected.
Economic	The implications of the investigation, construction, operation and closure of a GDF on the economy of the community that may be affected.
Health	The implications of the investigation, construction, operation and closure of a GDF on the health conditions of the community that may be affected.
Local Community Vision	The ability for the development of a GDF to be aligned with the Potential Host Community's objectives/ vision.

**3.27.** Similarly our health and social assessments will seek to identify benefits as well as disbenefits that may arise as a consequence of delivering a GDF. These assessments may also reflect on the implications for existing health and social services and infrastructure and the need for any improvements that may be required.

**3.28.** We expect that through working in partnership with communities we will identify community-specific preferences that we will need to respond to. Such specific preferences will be captured in the 'Local Community Vision Evaluation Consideration'. These in turn may also relate to other Siting Factors and Evaluation Considerations, for example they may have implications for transportation or environmental matters.





## Environment

- 3.29.** The delivery of a GDF for the disposal of higher activity radioactive wastes will represent one of the largest environmental infrastructure projects to be delivered in the UK. To successfully deliver a GDF we will need to satisfy a number of Requirements relating to the environment. Some typical examples of the matters that we may assess in order to comply with underlying Requirements are set out in **Table C** of Annex B.
- 3.30.** The assessments that we carry out under the Environment Siting Factor will be informed largely by the specific characteristics of the area under consideration and the likely impact of a proposed GDF on that area. There are however a number of environmental considerations and assessments that we will be required to carry out irrespective of the location under consideration – for example, Environmental Impact Assessments and Habitats Regulations Assessments will be required to support our applications for planning consents, and environmental safety cases will need to be prepared as part of our applications for environmental permits.

**Table 4:** Evaluation Considerations for the Siting Factor - Environment

Evaluation Consideration	Description
Environmental Implications	The implications of the investigation, construction, operation and closure of a GDF on the Environment.
Protected Habitats and Species	The implications of the investigation, construction, operation and closure of a GDF on Protected Habitats and Species.

- 3.31.** Our assessments under the Environment Siting Factor will take into account the implications of developing a GDF on the natural environment and the historic environment. We will also be assessing matters such as resource use and hydrological implications, which will include flood risk and, if appropriate, coastal change. We will reflect on the implications of investigating, constructing, operating and closure on the amenity of the area taking into account matters such as air quality, noise, light and vibration.
- 3.32.** We will assess whether there is the potential for likely significant impacts on internationally, nationally and locally designated sites of ecological or geological conservation importance.
- 3.33.** We will consider the impacts, both positive and negative, of delivering a GDF on the environment and the environmental matters which could impact upon, or pose a risk to, a GDF. Given the long-term nature of the delivery of a GDF our assessments will consider the effects of climate change, both in terms of the implications of a GDF on a changing receiving environment and in terms of the changes to future risks posed to a GDF.
- 3.34.** Long-term, post-closure radiological implications will be considered as part of the environmental safety case under the 'Safety after Closure Evaluation Consideration' within the Safety and Security Siting Factor.





### Engineering Feasibility

**3.35.** The characteristics of both the surface environment and sub-surface geological environment at any given location will influence all of the phases of delivery of a GDF at that location. The specific characteristics of the surface and sub-surface environment will be a key input into the ability to investigate, construct, operate and close a GDF in accordance with all relevant Requirements. These matters are considered in our Engineering Feasibility Evaluation Considerations.

**3.36.** Some typical examples of the matters that we may assess in order to comply with underlying Requirements are set out in **Table D** of Annex B.

**3.37.** Reflecting on the surface conditions, such as topography and ground conditions, as well as the sub-surface conditions, such as the depth and volume of potential host rock will inform our assessments on whether we consider that we will be able to characterise an area and subsequently design and construct a GDF to accommodate the inventory for disposal. There may also be implications we need to assess with respect to waste that has already been packaged.

**Table 5:** Evaluation Considerations for the Siting Factor - Engineering Feasibility

Evaluation Consideration	Description
Flexibility	The ability to apply a variety of design solutions to a given area or site.
Ability to Characterise	The ability to characterise an area / sites within the constraints of the area / site.
Ability to Design and Construct	The ability to design and construct a GDF within the constraints of the area / site.
Inventory for Disposal	The ability to design, construct and operate a GDF such that the agreed waste inventory can be disposed.
Sustainable Design	The ability to design, construct and operate a GDF in a sustainable manner.
Waste Conditioning and Packaging	The ability for waste that is already or still to be packaged to be accepted at a potential site.
Retrievability	The ability to design, construct and operate a GDF such that waste could potentially be retrieved during the operational phase if there is a compelling reason to do so.

**3.38.** The surface and sub-surface conditions will also influence other matters, such as the volume of spoil that may be generated and this will consequently inform how spoil may be managed for example any subsequent transportation implications.

**3.39.** Our assessments under the "Sustainable Design Evaluation Consideration" will take into account relevant sustainable design objectives, such as seeking to ensure that the built form, whilst needing to respond to a wide range of Requirements and technical constraints, is sensitive to the local environment.





## Transport

**3.40.** Transport considerations will be key to the successful delivery of a GDF in any given location. Our assessments will address the transport implications of developing a GDF and our evaluations will reflect on whether we have confidence that all relevant Requirements relating to transport are capable of being satisfied. Some typical examples of the matters that we may assess in order to comply with underlying Requirements are set out in **Table E** of Annex B.

**3.41.** The specifics of the transportation networks that relate to the geographical areas under consideration will be an input into the assessments under the Transport Siting Factor. Similarly, cumulative and off-site effects are also important and will be considered as will relevant local documents such as local transport plans.

**3.42.** The assessments that are undertaken will include transport impacts for all aspects of nuclear and conventional transport and include the implications of construction traffic.

**Table 6:** Evaluation Considerations for the Siting Factor - Transport

Evaluation Consideration	Description
Transport Safety	The ability to transport waste safely.
Transport Security	The ability to transport waste securely.
Transport Implications	The implications of the investigation, construction, operation and closure of a GDF on strategic and local transport networks.

- 3.43.** Our assessments under the 'Transport Safety Evaluation Consideration' will take into account whether we consider that we will be able to develop a transport safety case. This will include emergency measures that may need to be employed.
- 3.44.** The transport of materials, goods and personnel to and from an operational GDF or construction site can have a variety of impacts on the surrounding transport infrastructure, and potentially on connecting transport networks. Impacts may result particularly from increases in noise and emissions from road transport.
- 3.45.** Assessments under the 'Transport Implications Evaluation Consideration' will take into account the transportation implications on both the local and strategic transport networks and the use of all relevant transport modes.
- 3.46.** The responsibility for safe transport does not lie solely with us. We have responsibilities as the receiver of waste, and the waste producers have responsibility as the sender of waste. At this stage, the responsible organisation that will transport the waste is unknown and therefore we currently consider all relevant transport Requirements.





### Value for Money

**3.47.** In delivering a GDF at any location, we will need to satisfy a number of Requirements relating to value for money. As a subsidiary of the Nuclear Decommissioning Authority, we have a specific statutory duty to ensure that value for money is delivered. Our assessments will therefore need to address the financial implications of developing a GDF and our evaluations will reflect on whether we have confidence that all of the relevant Requirements can be satisfied<sup>7</sup>.

**3.48.** Some typical examples of the matters that we may assess in order to comply with underlying Requirements are set out in **Table F** of Annex B.

<sup>7</sup> Nuclear Waste Services as part of the NDA group, has a statutory duty to secure value for money in its dealings with others – [s9(2)(d) Energy Act 2004]

**Table 7:** Evaluation Considerations for the Siting Factor – Value for Money

Evaluation Consideration	Description
Lifetime Costs and Value	The costs and benefits of the investigation, construction, operation and closure of a GDF.
Waste Receipt Schedule	The implications of the investigation, construction and operation of a GDF relating to the assumed waste receipt schedule of the receipt of waste.

- 3.49.** The characteristics of both the surface environment and sub-surface geological environment at any given geographical location will influence the costs and benefits associated with the delivery of a GDF.
- 3.50.** When a GDF can accept waste following initial construction, and the rate at which a GDF can accept waste, will influence the timing of when waste can be disposed of. This has implications on the need for the ongoing storage of legacy waste, which in turn has an associated cost. These implications will be considered under the 'Waste Receipt Schedule Evaluation Consideration'.

*Finding a site for a GDF will be the first community consent-based process in the UK to be undertaken for a project of this size.*



## Section 4 Moving through the Siting Process

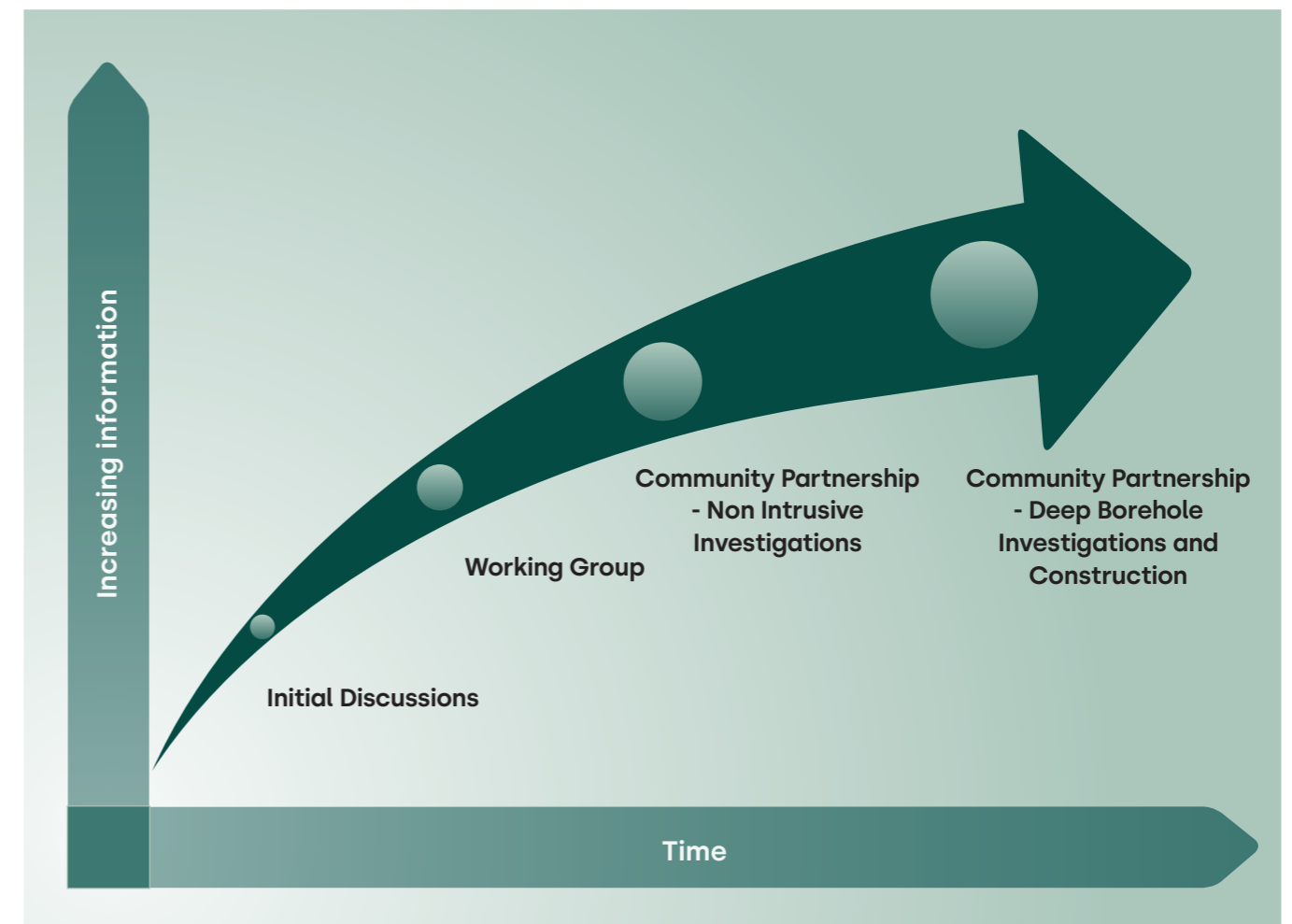
We will work in partnership with interested parties, communities and relevant principal local authorities to identify a suitable site for the development of a GDF with a willing community. We recognise that the local communities are likely to have considerable valuable knowledge and information about their area and we will look to draw upon that local knowledge when completing assessments and evaluations as appropriate.

## Moving through the Siting Process

### Our Assessments and Evaluations

- 4.1. It is anticipated that, over time, we will undertake increasingly detailed assessments and evaluations, as the information and data available in respect of the relevant area increases.
- 4.2. It is recognised that the level of information available will vary between different areas and sites being evaluated. In general, it is assumed that available and relevant information will increase as communities progress through the siting process. Figure 3 presents an overview of how the level of relevant information about a given geographical area will increase over time.

Figure 3: Information Gathering





- 4.3.** As such, our evaluations early in the siting process will recognise higher levels of uncertainty, with those areas of uncertainty being used to inform the type and scope of necessary future work and studies. Later in the siting process, as the levels of information, knowledge and data increases, we will be in a position to undertake increasingly detailed evaluations and provide robust siting decisions. In some cases, the decision to proceed 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.
- 4.4.** Up until the beginning of site characterisation, it is anticipated that most of the information being evaluated by us (both existing and newly-commissioned surface based surveys) will be focused on the surface areas or sites, with sub-surface information limited to existing desk-based information such as that provided through National Geological Screening, local geological knowledge and geological memoirs or potentially newly-commissioned non-intrusive geophysical surveys.
- 4.5.** We anticipate that the majority of new sub-surface information from techniques such as seismic surveys, shallow and deep boreholes, down-hole testing and sampling etc., will be generated during the site characterisation work that we will undertake in due course. It will be at this point where some of the assessments will significantly increase in detail and complexity with a much greater degree of information being made available including through the site-specific safety assessments which we would undertake.
- 4.6.** We recognise that communities may enter the siting process at different times, and there will be local matters that may influence the rate at which they may progress through the siting process. We will work with the communities that engage in the process at a pace that reflects their needs and preferences.
- 4.7.** The remainder of this section explains, at a high level, how the evaluations that are carried out will evolve as communities progress through the siting process. A summary diagram is included below at Figure 4.

### Initial Discussions

- 4.8.** Early evaluations are likely to focus on safety, making use of National Geological Screening information to inform discussions about the potential for finding a suitable site in the area under consideration. Alongside this, we will also consider at a high level the information available under each of the Siting Factors.
- 4.9.** At this stage in the process, we will only use existing readily available information to understand whether the area may be potentially suitable to host a GDF.
- 4.10.** The evaluations carried out during Initial Discussions may need to extend beyond the area identified by the interested party, in order for us to take an informed view on the surrounding geological conditions and geographical context.

### Working Group

- 4.11.** We will gather a range of information to understand the character and notable features of the area, together with any local issues and we will seek to familiarise and engage with the Working Group to respond to queries that may arise.
- 4.12.** As part of the Working Group, we will support the identification of a Search Area in accordance with the Working with Communities policy. As the Search Area may differ from the land originally identified during Initial Discussions we will undertake a further high level evaluation using existing readily available information to understand whether the Search Area that has been identified may be potentially suitable to host a GDF. Given that the information being evaluated at this early stage will still be at a high level and limited, the degree of uncertainty is also likely to remain high.
- 4.13.** We will also explain the key information gaps that will inevitably exist at this early stage which would be used to inform a future work programme to be discussed with the Community Partnership.



### Community Partnership - Non-intrusive Investigations

- 4.14.** This is the first time in the siting process when surveys will be commissioned and we will start to acquire new information about the Search Area. For example, surveys and assessments on ecology, transport, noise, air quality, etc. may be commissioned.
- 4.15.** Assessments at this point in the siting process will start to become more detailed, but will still be focused on surface features of the Search Area and developing understanding of what further work might be needed during site characterisation to better understand the geological environment through borehole drilling.
- 4.16.** If considered beneficial and necessary at this point, we may also decide to undertake non-intrusive geophysical survey work, such as aerial geophysical surveys or 'flyover surveys' in order to help shape the understanding of the area.
- 4.17.** Much of the information produced at this stage, although used primarily for assessments and evaluation, would also be used to support DCO applications and the environmental permit applications for boreholes.
- 4.18.** It may be necessary to undertake a comparative evaluation if several communities are still involved in the process. This is discussed further in **Section 5**.

We welcome  
your views,  
comments  
and questions

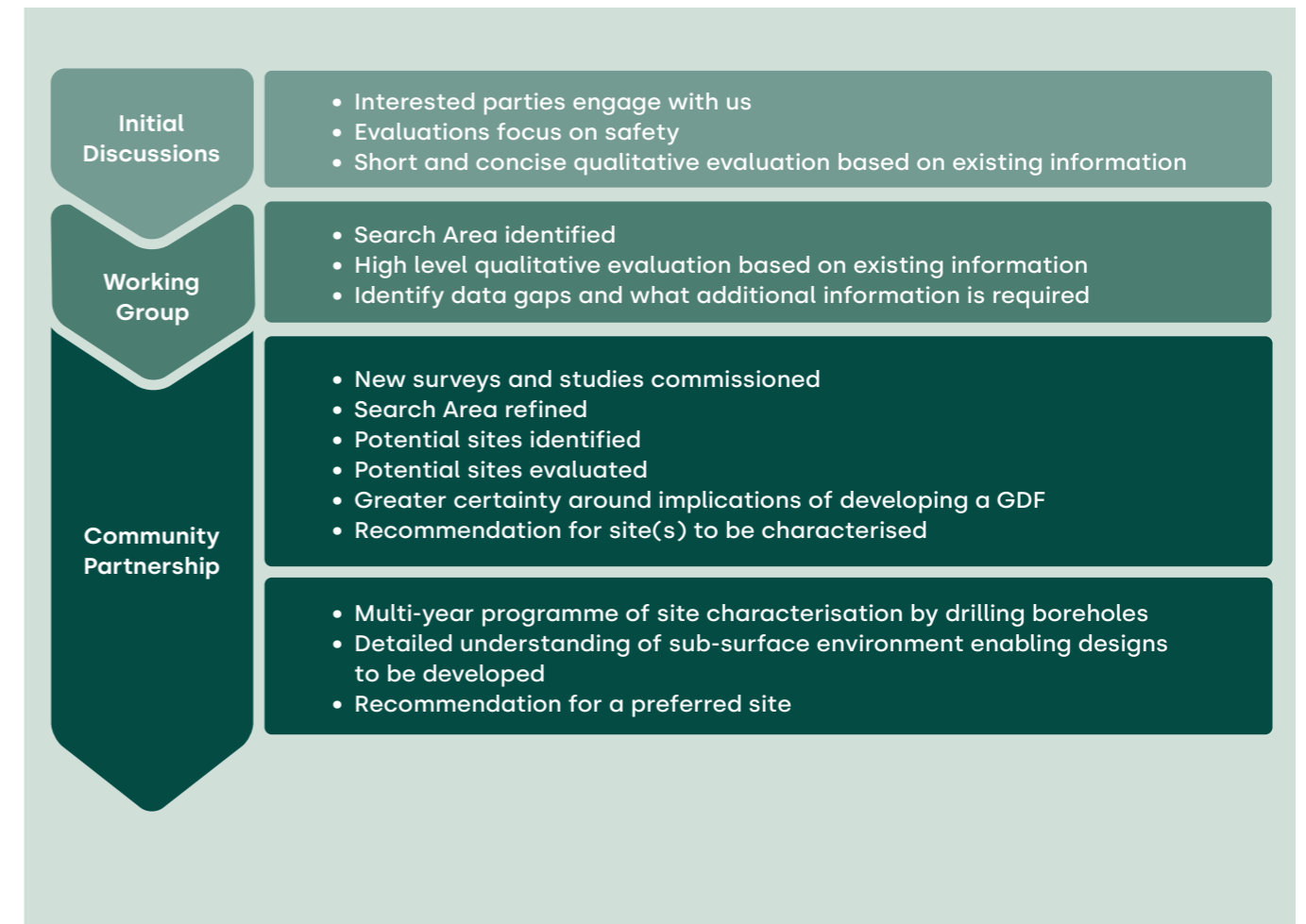
*Permanently closing  
a GDF provides the  
greatest safety and  
security. Geological  
disposal is internationally  
recognised as the  
responsible solution,  
for generations long  
into the future.*



### Community Partnership - Deep Borehole Investigations and Construction

- 4.19. We will need to apply for development consent and for an environmental permit(s) to carry out deep borehole investigations. Information gathered up until this point, informed by the Siting Factors and the Evaluation Considerations, will be used for the purposes of us making the relevant applications for development consent and an environmental permit(s).
- 4.20. The deep borehole investigations will gather information about the geological conditions at potential site(s) to enable us to assess whether a GDF could be designed, constructed, operated and closed safely in accordance with the Requirements.
- 4.21. We will begin to generate the majority of new sub-surface information. It will be at this point where some of the assessments will increase significantly in detail and complexity with a much greater degree of information being made available, including the site-specific safety assessments which we will undertake.
- 4.22. When sufficient information is available, a Potential Host Community can be identified. As set out in the Working with Communities policy, the Potential Host Community will include all of the wards in which the following are 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 through environmental impact assessment work carried out to support our engagement with communities and our development consent applications).
- 4.23. Based on the information gathered during the process, and the on-going discussions within the Community Partnership, we will evaluate the geographical area within the Potential Host Community's boundaries and its potential suitability to host a GDF.

Figure 4: The siting process and site evaluations summary



- 4.24. A Test of Public Support, at a time agreed with the Community Partnership, will be carried out to confirm whether the Potential Host Community is willing to host a GDF.
- 4.25. 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 GDF, and a preferred site has been selected, we, subject to the Secretary of State's approval, will proceed with applications for the relevant planning and regulatory consents required for the underground investigations, construction and operation of a GDF.
- 4.26. At the appropriate time, we will use the information gathered to inform our applications for development consent, environmental permits and a nuclear site licence required for the construction, operation and closure of a GDF.



## Section 5

# Assessments and Evaluations


Building on global best practice we will conduct assessments and evaluations in an open and transparent manner. These will consider the likely effects of the investigation, construction, operation and closure of a GDF in the relevant geographical location, as well as the likely post-closure effects.

### Scope of our Assessments and Evaluations

- 5.1.** We use the term '**assessment**' to describe the gathering of baseline data and considering or assessing the potential effects of implementing a GDF in a given area or site. Where it is relevant and appropriate we will take into account direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects. This will include assessing the long-term implications of delivering a GDF, including accounting for matters such as climate change, geological change, hydrogeological change, long-term environmental change as well as the changing human environment, as appropriate.
- 5.2.** We use the term '**evaluations**' to describe how we will structure our analysis of an area or site around the Siting Factors and Evaluation Considerations. These evaluations will use the output from our assessments. Our evaluations will be qualitative in nature, but in many cases will be supported and underpinned by quantified data gathered and produced during the assessments.
- 5.3.** The evaluation approach to be used will be an evidence-based and iterative process but will not involve "hard" numerical scoring or weighting of the Siting Factors and Evaluation Considerations. Our evaluations will consider whether we have confidence in being able to satisfy at that point in time, or at some point in the future, the Requirements that will ultimately need to be satisfied to deliver a GDF.
- 5.4.** Whilst considering whether we can satisfy all the relevant Requirements we will seek to avoid, prevent, reduce or if possible, offset any identified adverse effects of the investigation, construction, operation and closure of a GDF. We will also seek to deliver enhancements and add value to the local community and local places where practicable. We will present these effects, both positive and negative, in our assessments and evaluations.
- 5.5.** Where it is relevant and appropriate we will identify uncertainties as well as the consequences of future changes in the baseline environment, such as climatic change and demographic change. Where it is relevant and appropriate risks around accidents and natural disasters will also be captured in our assessments and evaluations.



- 5.6. Our assessments and evaluations will focus on the areas under consideration, but will also involve us considering implications that extend beyond the boundaries of the Search Area and the Potential Host Community, both of which will be defined in accordance with the Working with Communities policy.
- 5.7. Overlaps and interactions between the six Siting Factors and Evaluation Considerations will occur and will need to be understood and accounted for, so as not to overstate any particular aspects of the evaluation. For example, enhancements to the transport network may generate adverse environmental impacts and have consequences for value for money assessments but also create benefits for the community.
- 5.8. Our evaluations will always consider whether a GDF is deliverable within the geographical and geological constraints of the area(s) and site(s) under consideration in accordance with the Requirements that need to be satisfied. The evidence gathered to evaluate areas and sites against any of the Siting Factors and Evaluation Considerations may potentially identify reasons for us to withdraw from the siting process in the area under consideration, even in the event of a community wishing to continue.
- 5.9. The Siting Factors and underlying Evaluation Considerations will provide the overall structure for the evaluation reports and will inform the decisions that will be required from the Secretary of State. Information gathered will also be used to support our applications for all the necessary consents, permits and licences that are required for the investigation, construction, operation and closure of a GDF.
- 5.10. Our assessments will be wide ranging, and our evaluations will take all matters into account in a holistic manner. We will factor in how the accumulation of, and interrelationships between, matters may generate other effects and how the effects of our proposals would combine and interact with the effects of other development. This may include projects for which consent has been sought and those which have been granted, as well as those already in existence.
- 5.11. Any claim that we make that a specific Requirement can be satisfied, or we believe that we will be able to satisfy it in the future, will need to be supported by evidence as well as the reason why the evidence we have supports our assertion and will include details of any assumptions and uncertainties.
- 5.12. When completing our assessments and evaluations each area and site will be considered on its own merits, but within the context of this approach to establish a consistent standard of evaluation.



*The geological conditions at a potential site will make a significant contribution to a number of the Siting Factors, particularly in regard to long-term safety.*



## Evaluating Community Engagement

- 5.13.** The level of community engagement, and ultimately the willingness of a community to host a GDF is a fundamental requirement that needs to be satisfied. This is a key component, and indeed an absolute requirement, of the Working with Communities policy and the siting process.
- 5.14.** The UK Government's Working with Communities policy confirms that a GDF will only be constructed and operated in a given area where the community in question has demonstrated its support for hosting a facility through the Test of Public Support. Communities have a right to withdraw from the siting process up until they have taken a Test of Public Support.<sup>8</sup>
- 5.15.** One of the roles of the Community Partnership is to monitor public opinion on the potential to site a GDF within the Search Area and the Potential Host Community. This ongoing monitoring of public opinion will help us understand whether a community could be willing to host a GDF.
- 5.16.** For the avoidance of doubt, this monitoring is separate to the evaluations that are discussed under the Community Siting Factor.

<sup>8</sup> Paragraphs 6.95 to 6.103 of *Implementing Geological Disposal – Working With Communities, An updated framework for the long-term management of higher activity radioactive waste*. HM Department for Business, Energy and Industrial Strategy (December 2018)

## Comparative Evaluations

- 5.17.** We recognise that, periodically, comparative evaluations may be required throughout the siting process.
- 5.18.** We will need to obtain approval from the Secretary of State at two key decision points – these are:
- the selection of sites for borehole investigations (site characterisation activities); and
  - the selection of a site for underground investigation, construction and operation of a GDF.
- 5.19.** As part of these selection processes, it may be that we need to carry out comparative evaluations of a number of areas or sites in order to inform these decisions. Our approach to comparative evaluations, if required, will be one premised on working collaboratively with communities using an open and transparent approach based on the holistic consideration of the Requirements to be satisfied through the use of our Siting Factors and underpinning Evaluation Considerations.
- 5.20.** We are committed to undertaking qualitative evidence-based evaluations that are structured around the Siting Factors and Evaluation Considerations and capable of being applied consistently. Our evaluations must be capable of making and communicating judgments on values and relative importance, and accommodate a wide range of sources and types of evidence. They will be robust against differences to the number of Evaluation Considerations under each Siting Factor, and to interrelationships and overlaps between Evaluation Considerations and differing levels of information within different communities. They will include sensitivity testing and consideration of alternative scenarios where appropriate.
- 5.21.** There are methods that are commonly used to carry out comparisons through the use of qualitative evaluations. One such approach is that which we have used in our Generic Environmental Assessment work<sup>9</sup>, which forms one part of our generic Disposal System Safety Case.

<sup>9</sup> *Geological Disposal – Generic Environmental Assessment – Radioactive Waste Management (December 2016)*



Safety, security and the protection of the environment are our absolute priorities, and are fundamental requirements of delivering a GDF. The assessment and evaluation work undertaken throughout the siting process will be subjected to oversight and scrutiny in numerous ways.

Safety and security are paramount. If we cannot demonstrate that a GDF will be safe and secure, and that the facility will satisfy the UK's strict safety and security standards, it cannot be built.

### Independent Regulators

- 6.1.** The UK's environmental and nuclear safety and security regulators are independent organisations that are responsible for regulating the development, operation and closure of a GDF to ensure it meets the required high standards of safety and environmental protection.
- 6.2.** The regulators are not involved in making decisions about selecting sites for investigation or development. However, we will maintain a close dialogue throughout the siting process in order to ensure that all environmental, safety, security and transport matters are addressed.
- 6.3.** The formal regulatory process for geological disposal will begin from the point at which we require regulatory approvals or consents prior to carrying out specific activities. For example, we will need an environmental permit from the EA prior to undertaking surface-based investigations such as drilling boreholes, and before we begin construction of a GDF we will need a nuclear site licence from ONR. A GDF will not be allowed to be developed, constructed or operated without the explicit prior permission from the regulators.
- 6.4.** If requested, regulators will work with communities, local authorities and others to explain how their work will help protect people and the environment, both now and in the future. They will also provide advice and comment on matters within their regulatory remit.
- 6.5.** While ONR will regulate safety on the nuclear licensed site, the safety of activities undertaken elsewhere will be regulated by the Health and Safety Executive. This would include, for example, the regulation of safety during surface-based investigations such as drilling boreholes.
- 6.6.** Developing a GDF will also involve Natural England and, if a site which extends under the seabed is identified, the Marine Management Organisation. We will engage closely with both of these regulatory bodies throughout the siting process.
- 6.7.** Natural England would provide advice on any potential impacts on protected sites, landscapes and certain agricultural land, and on opportunities for positive environmental benefits such as biodiversity net gain. If relevant, it would also be responsible for licensing certain work so it doesn't adversely affect protected species.
- 6.8.** The Marine Management Organisation license, regulate and plan marine activities in the seas around England so that they are carried out in a sustainable way.



## Governance

- 6.9.** RWM, now trading as Nuclear Waste Services, was established in 2014 as a wholly owned subsidiary of the NDA, which is an executive non-departmental public body of the Department for Energy Security and Net Zero (DESNZ). The majority of our activities directly support the NDA's strategy and, as such, the two organisations have common objectives and we operate in line with, and are subject to, NDA governance procedures. Being part of the NDA Group provides for appropriate governance to reflect this alignment of objectives. It provides a delivery organisation which can apply for and hold regulatory permissions and licences as a legal entity in its own right as required by regulators. As the DESNZ is our sponsoring Department, there are certain sanctions and approvals processes that we must comply with.
- 6.10.** Governance of Nuclear Waste Services is through our Board of Directors which sets the strategic framework and direction within which we operate. We are responsible for ensuring that high standards of corporate governance are observed at all times. In particular, we are responsible for agreeing the plans against which overall performance and delivery is monitored and measured. We also ensure the maintenance of an appropriate control framework through which we obtain assurance that risk is properly assessed and managed.
- 6.11.** Nuclear Waste Services operates in accordance with the provisions of the Energy Act 2004, under which the NDA was established, and Cabinet Office guidelines for non-departmental public bodies. Like our parent, NDA, we seek to apply as appropriate, best practice in corporate governance as represented by the UK Corporate Governance Code.
- 6.14.** We also operate a **Nuclear Safety and Environment Committee** to provide authoritative advice and scrutiny on nuclear and radiological safety and environmental protection matters.
- 6.15.** We will benchmark against overseas programmes, other UK infrastructure projects, and projects with community involvement and seek external advice.

## Local Authorities

- 6.16.** 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. Local authorities also have statutory responsibilities for matters such as emergency planning and the production of policy documents and plans that may be relevant to our assessments and evaluations. 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.
- 6.17.** As explained in section 2 local authorities have a key role on the land use planning processes. In terms of DCO applications, which are managed by the Planning Inspectorate, the local authorities concerned may submit a Local Impact Report to the Planning Inspectorate, who will examine any applications for a development consent order. For applications which fall outside the definition of geological disposal infrastructure or associated development in the Planning Act 2008 may require a separate application for planning permission to the local authority.

## Community

- 6.18.** The consent-based siting process set out in the Working with Communities policy applies in addition to the land use planning and regulatory processes that will apply to a development of this nature and complexity. All of the usual opportunities for the public to scrutinise and have a say in the development of such a major infrastructure project will remain.
- 6.19.** Over and above all of the relevant Requirements that are applicable throughout the siting process we also have to satisfy the communities that are engaged. Ultimately we have to satisfy the Potential Host Communities. If a Potential Host Community is not satisfied then we recognise that we will be unlikely to receive a positive Test of Public Support.

## Assurance

- 6.12.** We are committed to achieving high standards of performance and consistently delivering on our commitments to customers and stakeholders. In order to achieve the standards critical to the delivery of our vision and mission, we maintain an integrated management system which includes the application of independent oversight of the programme to support improvement and learning.
- 6.13.** Assurance of the evaluations undertaken will be carried out by our internal independent oversight teams.



## Section 7

# Finding out more and contacting us

### Contact us

We hope that you have found this document helpful. We welcome your involvement and your feedback, so if you would like to discuss anything we have said in this document or seek further clarification, then please do get in touch.

**Please e-mail us at:**  
info@nuclearwasteservices.uk

**or write to us at:**  
Freepost NUCLEAR WASTE SERVICES

To ensure delivery, please use lower and uppercase as above.

### Glossary

#### Assessment

The gathering of baseline data and considering the potential effects of implementing a GDF in a given area or site.

Where it is relevant and appropriate we will take into account direct, indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects. This will include assessing the long-term implications of delivering a GDF, including accounting for matters such as climate change, geological change, hydrogeological change, long-term environmental change as well as the changing human environment, as appropriate.

#### Comparative Evaluation

An evaluation of the similarities and differences between two or more sites. Our approach to comparative assessment will be premised on an open and transparent approach based on the holistic consideration of the Siting Factors and underpinning Evaluation Considerations.

#### Community Guidance

Guidance that we have developed to provide information, help and advice in support of the policy frameworks that exist in England and Wales. It is for anyone who is interested in learning more about geological disposal and the process for identifying a site for a GDF.

#### Community Partnership

The partnership between the members of the community, at least one Relevant Principal Local Authority and ourselves.

#### Development Consent Order (DCO)

The form of planning consent in England given by the Secretary of State for specified development that constitutes a Nationally Significant Infrastructure Project for the purposes of the Planning Act 2008.

#### Disposal System Specification (DSS)

A document produced by us to set out the high-level and technical requirements on its organisational management, site selection, site evaluation and GDF design, construction, operation and closure.

#### Environmental safety

The safety of people and the environment both at the time of waste disposal and in the future.

#### Environmental Safety Case

The collection of arguments, provided by the developer or operator of a GDF, that seeks to demonstrate that the required standard of environmental safety is achieved.

#### Evaluation

As explained in paragraph 5.2 of this document, we use the term 'evaluations' to describe how we will structure our analysis of an area or site around the Siting Factors and Evaluation Considerations. These evaluations will use the output from our assessments. Our evaluations will be qualitative in nature, but in many cases will be supported and underpinned by quantified data gathered and produced during the assessments.

#### Evaluation Considerations

The Evaluation Considerations that underpin each of the six Siting Factors set out in this Site Evaluation document and which will be used to guide the evaluations and discussions with communities.



**Glossary - continued**

**Generic Disposal System Safety Case (gDSCC)**

A generic and non-site-specific document produced by us to set out the high-level and technical requirements on our organisational management, site selection, site evaluation and GDF design, construction, operation and closure.

**Geological Disposal Facility (GDF)**

A geological disposal facility is a highly-engineered facility capable of isolating radioactive waste within multiple protective barriers, deep underground, to ensure that no harmful quantities of radioactivity ever reach the surface environment.

**Geological disposal infrastructure**

In England, certain geological disposal infrastructure has been included within the statutory list of Nationally Significant Infrastructure Projects in the Planning Act 2008. This includes:

- radioactive waste Geological Disposal Facilities constructed at a depth of at least 200 metres beneath the surface; and
- deep boreholes at a depth of at least 150 metres beneath the surface and developed for the purposes of obtaining information, data or samples to determine site suitability.

**Higher activity radioactive waste**

Higher activity radioactive waste is defined as: high level waste, intermediate level waste and a small fraction of low level waste with a concentration of specific radionuclides sufficient to prevent its disposal as low level waste.

**High level waste**

Radioactive wastes that generate heat as a result of their radioactivity, so this factor has to be taken into account in the design of storage or disposal facilities.

**Intermediate level waste**

Radioactive wastes exceeding the upper activity boundaries for low level waste but which do not need heat to be taken into account in the design of storage or disposal facilities.

**Initial Discussions**

Early contact with an Interested Party to help them to find out more about: the Siting Process; to understand whether a site/area put forward has any potential to host a GDF; and to help them to decide whether they want to seek to form a Working Group and open up a wider discussion.

**Interested Party**

This is the group, organisation, or individual(s) who first started discussions with us.

**Inventory for disposal**

The specific types of higher activity radioactive waste (and nuclear materials that could be declared as waste) which may need to be disposed of in a GDF.

**Land Use Planning Requirements**

The requirements established by the land use planning regime that the relevant decision makers must have regard to when determining applications made for development consent for certain geological disposal infrastructure under sections 14 and 30A of the Planning Act 2008 or applications made under the Town and Country Planning Act 1990. As explained further in paragraphs 2.19 to 2.28 of this document.

**Legal and Other Requirements**

The requirements derived from legislative and regulatory instruments and regimes, as well as any relevant associated guidance regarding those regimes, which relate to the siting, design, construction, operation, closure and post closure of a GDF. As explained further in paragraphs 2.1 to 2.4 of this document.

**Local Impact Report (LIR)**

A report, which can be submitted by a local authority as part of the Development Consent Order process in accordance with Section 60(3) of the Planning Act 2008, giving the details of the likely impacts of a Nationally Significant Infrastructure Project on the authority's area.

**Low level waste**

Radioactive wastes not exceeding specified levels of radioactivity. The major components of low level waste are building rubble, soil and steel items from the dismantling and demolition of nuclear reactors and other nuclear facilities.

**National Geological Screening (NGS)**

The National Geological Screening provides a high level summary of the existing geological information of relevance to the safety of a GDF to inform initial discussions with communities.

**National Planning Policy Framework (NPPF)**

The National Planning Policy Framework sets out the UK Government's planning policies for England and how these should be applied. It

provides a framework within which locally-prepared plans for housing and other development can be produced.

**National Policy Statement (NPS)**

A statement designated under the Planning Act 2008 that provides policy guidance to the Planning Inspectorate and Secretary of State on assessing and making decisions on DCO applications for Nationally Significant Infrastructure Projects in England. The National Policy Statement for Geological Disposal Infrastructure was designated by the Secretary of State on the 17th October 2019.

**Nationally Significant Infrastructure Project (NSIP)**

NSIPs are major infrastructure developments that are listed in the Planning Act 2008. Certain geological disposal infrastructure in England constitutes an NSIP and will be consented by way of DCO.



**Glossary - continued**

**Nuclear Decommissioning Authority (NDA)**

A non-departmental public body established by the Energy Act 2004 to ensure the safe and efficient clean-up of the UK's public sector, civil nuclear legacy. The NDA has statutory responsibility for decommissioning and cleaning-up 17 UK sites and the associated liabilities and assets. It reports to the Department for Energy Security and Net Zero (DESNZ); for some aspects of its functions in Scotland, it is responsible to Scottish Ministers.

**Nuclear Decommissioning Authority Client Specification**

The NDA has established Nuclear Waste Services, formerly known as RWM, as a wholly owned subsidiary to deliver geological disposal for higher activity radioactive waste and provide radioactive waste management solutions. The Client Specification is the principal document used by NDA to define what work activities we are required to deliver. NDA's requirements of us are aligned with its published Strategy.

**Nuclear Safety Case**

Documentation provided by a nuclear site licensee to demonstrate that the site meets the nuclear safety and security requirements of the Office for Nuclear Regulation (ONR).

**Nuclear Safety and Environment Committee (NSEC)**

We have established a Nuclear Safety and Environment Committee (NSEC) in recognition of Nuclear Site Licence requirements and the Environment Agency Guidance on Requirements for Authorisation for Geological Disposal Facilities on Land. NSEC provides an authoritative committee that can consider and advise the Nuclear Waste Services Executive and Board on matters that may have an effect on nuclear safety and environmental protection.

**Nuclear Waste Services (NWS)**

Part of the Nuclear Decommissioning Authority group, established in 2014 for the purpose of delivering geological disposal and providing solutions for the management of higher activity waste.

**Potential Host Community**

The Potential Host Community is the community within a geographical area that could potentially host a GDF.

**Qualitative**

Evidence based, often underpinned by hard data but not involving "hard" numerical scoring or weighting of the Siting Factors and Evaluation Considerations.

**Relevant Principal Local Authorities**

A principal local authority is a district, county or unitary authority. Relevant principal local authorities will be the principal local authorities that represent people in all or part of the area under consideration, whether the Search Area or the Potential Host Community.

**Requirements**

The term used in this document to include together: (1) the Legal and Other Requirements, (2) the Siting Process Requirements and (3) the Land Use Planning Requirements.

**Right of Withdrawal**

The ability for a community or ourselves to withdraw from the siting process.

**Safety Case**

A collection of arguments and evidence in support of the safety of a facility or activity. This will normally include the findings of a safety assessment and a statement of confidence in these findings. For a GDF, there will be a number of safety cases required including, for example, nuclear safety, environmental safety, and transport. A safety case may also relate to a given stage of development (e.g. site investigations, commissioning, operations, closure, post-closure, etc).

**Search Area**

The Search Area is the geographical area encompassing all the electoral wards within which we will be able to search for potential sites. For areas which include potential for development under the seabed, the Search Area will comprise only that area on land.

**Siting Process Requirements**

The Siting Process Requirements are derived from the Government's Working with Communities policy, which sets out how we will work in partnership with interested parties, communities and the principal local authorities that represent those communities to identify a suitable site for the development of a GDF. As explained further in paragraphs 2.5 to 2.18 of this document.

**Test of Public Support**

A mechanism to establish whether residents of the Potential Host Community support the development of a GDF within their community.

**Transport Safety Case**

Demonstrates that transport operations can be achieved safely and meets the relevant requirements.

**Working Group**

The Working Group is formed in the early part of the GDF siting process in order to gather information about the community and provide information to the community about geological disposal before a Community Partnership is formed. It comprises the interested party, ourselves, an independent facilitator, an independent chair and any relevant principal local authorities that wish to join.

**Working with Communities policy**

"Implementing Geological Disposal - Working with Communities: An updated framework for the long-term management of higher activity radioactive waste", HM Department for Business, Energy and Industrial Strategy (December 2018).



## Section 9

### Annex A - Devolved Administrations

- 9.1. Welsh Government policy on implementing geological disposal is set out in three documents: **Management and Disposal of Higher Activity Waste**<sup>10</sup>, **Geological Disposal of Higher Activity Radioactive Waste: Community Engagement and Siting processes**<sup>11</sup> and **Geological Disposal of Higher Activity Radioactive Waste: Working with Communities**<sup>12</sup>.
- 9.2. The Welsh Government published its latest policy on the arrangements for a GDF community consent-based siting process in Wales that reflects specific Welsh circumstances while being compatible with the key elements of the UK Government's geological disposal programme.
- 9.3. In Wales, planning issues are considered by the relevant local authority in whose area the surface infrastructure is located. The Welsh Government recently consulted on **changes to the consenting of infrastructure in Wales**<sup>13</sup>. It is proposed that both deep investigative boreholes and the Geological Disposal Facility would be included as Welsh Infrastructure Projects. In this process Welsh Ministers would act as the consenting authority.
- 9.4. The Northern Ireland Executive has responsibility for ensuring that any proposed GDF in England and Wales will not have an adverse impact upon the environment, health or safety of Northern Ireland. There are no plans to site a GDF in Northern Ireland. Any future policy decisions in relation to geological disposal in Northern Ireland would be a matter for the Northern Ireland Executive.
- 9.5. The Scottish Government is not a sponsor of the geological disposal programme, but does remain committed to dealing responsibly with radioactive waste arising in Scotland. In January 2011, the Scottish Government published its **Higher Activity Waste Policy**<sup>14</sup>. Scottish Government policy is that the long-term management of higher activity radioactive waste should be in near-surface facilities. Facilities should be located as near to the sites where the waste is produced as possible. While the Scottish Government does not support deep geological disposal for Scotland, it continues, along with the UK Government and other devolved administrations, to support a robust programme of interim storage and an ongoing programme of research and development.

<sup>10</sup> Welsh Government Policy on the Management and Disposal of Higher Activity Radioactive Waste. WG23160

<sup>11</sup> Geological Disposal of Higher Activity Radioactive Waste: Community Engagement and Siting processes, (December 2015)

<sup>12</sup> Welsh Government, Geological Disposal of Higher Activity Radioactive Waste: Working with Communities, (January 2019)

<sup>13</sup> Welsh Government, Consultation Document, Changes to the consenting of infrastructure: Towards establishing a bespoke infrastructure consenting process in Wales, (April 2018)

<sup>14</sup> Scottish Government's Higher Activity Waste Policy, (2011)

## Section 10

### Annex B - Examples of typical matters we may be assessing under each Evaluation Consideration.

- 10.1. This Annex B provides some examples of the typical matters that we are likely to need to assess for each of the Evaluation Considerations in order to show that we can comply with the underlying Requirements. These examples are highlighted as *italic text* in the Tables A to F below.
- 10.2. The examples provided in the tables below are not an exhaustive list of the matters we will need to assess in order to comply with the underlying Requirements. This is because the specific matters that will require assessment will depend on each specific location.



**Table A: Safety and Security**

Evaluation Consideration	Description
<b>Safety during Investigation</b>	The ability to investigate areas and sites safely within the constraints of the area / site and the long term implications of those investigations. <ul style="list-style-type: none"> <li>The ability to safely carry out investigations from a surface environment either onshore or inshore.</li> <li>The ability to carry out investigations so as to protect the long-term safety functions of the geological environment.</li> </ul>
<b>Safety during Construction</b>	The ability to build a GDF safely and the long term implications of that construction. <ul style="list-style-type: none"> <li>The ability to construct a GDF safely.</li> <li>The implications of natural and other external hazards such as flooding.</li> <li>The ability to design and construct a GDF in such a way as to protect the safety functions of the geological environment.</li> </ul>
<b>Safety during Operations</b>	The ability to operate a GDF safely and the long term implications of that operation. <ul style="list-style-type: none"> <li>The implications of natural and other external hazards.</li> <li>The implications of nearby hazardous facilities or protected military areas.</li> <li>The ability to develop and implement emergency and contingency plans.</li> </ul>
<b>Safety after Closure</b>	The ability to isolate and contain radioactive waste for the time required for the radioactivity to naturally reduce to acceptable levels. <ul style="list-style-type: none"> <li>The suitability of the host geological environment including the consideration of:                             <ul style="list-style-type: none"> <li>rock type;</li> <li>rock structure;</li> <li>groundwater;</li> <li>natural process; and</li> <li>resources.</li> </ul> </li> <li>The ability of the potential site to isolate radioactive waste from people and the biosphere over the long-term after closure.</li> <li>The natural evolution of the site which could cause it to be disturbed at some point in the future, including long term climate change and long-term geological changes.</li> <li>Other events such as seismic activity or glaciation which could cause the site to be disturbed at some point in the future.</li> <li>The likelihood of human intrusion at some point in the future.</li> <li>The ability for a GDF to provide adequate protection against any non-radiological hazards.</li> </ul>
<b>Management Requirements</b>	The ability to satisfy the relevant administrative Requirements within the constraints of the area / site. <ul style="list-style-type: none"> <li>The likely period required after closure to address institutional control requirements.</li> <li>The arrangements for maintaining the information on a GDF.</li> </ul>
<b>Security</b>	The ability to design, construct, operate and close a GDF such that the relevant security Requirements are satisfied. <ul style="list-style-type: none"> <li>The ability to design, construct and operate a GDF to protect against:                             <ul style="list-style-type: none"> <li>any deliberate release of radioactive material;</li> <li>theft or misappropriation of nuclear or radiological waste material; and</li> <li>sabotage of all or parts of a GDF and its processes.</li> </ul> </li> <li>The ability to develop and implement emergency and contingency plans.</li> </ul>
<b>Safeguards</b>	The ability to design, construct, operate and close a GDF such that the relevant safeguarding Requirements are satisfied. <ul style="list-style-type: none"> <li>The ability to safeguard the wastes and ensure it is not diverted for military uses or other undeclared purposes.</li> </ul>

**Table B: Community**

Evaluation Consideration	Description
<b>Community Wellbeing</b>	The implications of the investigation, construction, operation and closure of a GDF on the wellbeing of the community that may be affected. <ul style="list-style-type: none"> <li>The implications of a proposed GDF on the cultural identity of the area.</li> <li>The capacity and need for educational and visitor facilities.</li> <li>The effect of the delivery of a GDF on people with protected characteristics.</li> <li>The effect on local services.</li> </ul>
<b>Social</b>	The implications of the investigation, construction, operation and closure of a GDF on the social conditions of the community that may be affected. <ul style="list-style-type: none"> <li>The available and required social services and infrastructure.</li> <li>The implications of delivering a GDF on social stability and community cohesion.</li> <li>Current and future population demographics and availability of housing.</li> </ul>
<b>Economic</b>	The implications of the investigation, construction, operation and closure of a GDF on the economy of the community that may be affected. <ul style="list-style-type: none"> <li>The implications of a proposed GDF on existing economic activities.</li> <li>New economic development opportunities that may be provided.</li> <li>Employment levels and potential opportunities that the delivery of a GDF could bring.</li> <li>Training capacity and potential opportunities for training a workforce.</li> <li>The availability of existing infrastructure and potential requirements for new infrastructure.</li> </ul>
<b>Health</b>	The implications of the investigation, construction, operation and closure of a GDF on the health conditions of the community that may be affected. <ul style="list-style-type: none"> <li>The health implications of developing a GDF.</li> <li>The implications on recreation and amenity.</li> <li>The implications on access to health services and facilities.</li> </ul>
<b>Local Community Vision</b>	The ability for the development of a GDF to be aligned with the Potential Host Community's objectives/ vision. <ul style="list-style-type: none"> <li>The implications of the investigation, construction, operation and closure of a GDF on the vision of the community that may be affected.</li> </ul>



Table C: Environment

Evaluation Consideration	Description
Environmental Implications	<p>The implications of the investigation, construction, operation and closure of a GDF on the Environment.</p> <ul style="list-style-type: none"> <li>Air quality, including effects on existing air quality and sensitive receptors.</li> <li>Noise, vibration and lighting, including effects on existing baseline levels of noise and sensitive receptors.</li> <li>Biodiversity and nature conservation, including effects on flora and fauna, habitats and designated sites.</li> <li>Climatic factors including effects of climate change and ability to use low carbon technologies and renewable energy sources.</li> <li>Historic environment implications, including effects on the historic landscape, heritage assets and their setting as well as archaeological and palaeontological assets.</li> <li>Flood risk and coastal change, including drainage and hydrology implications.</li> <li>Landscape and visual implications, including effects on the character of the landscape, townscape and seascape (as appropriate).</li> <li>Land use, including effects on and compatibility with existing land uses.</li> <li>Geology and soils, including effects on soil quality and features of geological interest.</li> <li>Waste management, including the ability to adhere to the waste management hierarchy and management of waste, such as spoil.</li> <li>Resources, including the ability to utilise resources efficiently.</li> <li>Water quality, including surface and groundwater quality.</li> <li>Any mitigation measures which are required as a consequence of satisfying relevant Requirements.</li> </ul>
Protected Habitats and Species	<p>The implications of the investigation, construction, operation and closure of a GDF on Protected Habitats and Species.</p> <ul style="list-style-type: none"> <li>Any likely significant impacts on internationally, nationally and locally designated sites of ecological or geological conservation importance (including those outside England) including:                             <ul style="list-style-type: none"> <li>International Sites;</li> <li>Sites of Special Scientific Interest (SSSIs);</li> <li>Marine Conservation Zones (MCZs);</li> <li>Regional and Local Sites;</li> <li>Ancient Woodland, and Ancient and Veteran Trees;</li> <li>Biodiversity within and around developments; and</li> <li>Protection of Other Habitats and Species</li> </ul> </li> </ul>

Table D: Engineering Feasibility

Evaluation Consideration	Description
Flexibility	<p>The ability to apply a variety of design solutions to a given area or site.</p> <ul style="list-style-type: none"> <li>Whether there are particular characteristics of an area or site which may provide greater flexibility in terms of design, construction, operation and closure .</li> </ul>
Ability to Characterise	<p>The ability to characterise an area / sites within the constraints of the area / site.</p> <ul style="list-style-type: none"> <li>The size, shape and topography of the surface areas and ground conditions and the implications on the ability to characterise the area or site.</li> <li>The availability of utilities to enable the characterisation activities.</li> </ul>
Ability to Design and Construct	<p>The ability to design and construct a GDF within the constraints of the area / site.</p> <ul style="list-style-type: none"> <li>The geological environment including the depth, size, and geometry of accessible host rock(s).</li> <li>The size, shape and topography of the potential surface areas and likely ground conditions.</li> <li>The nature, volume and timing of the spoil that will be generated.</li> <li>Access to existing infrastructure and the ability to deliver new infrastructure if it is required.</li> </ul>
Inventory for Disposal	<p>The ability to design, construct and operate a GDF such that the agreed waste inventory can be disposed.</p> <ul style="list-style-type: none"> <li>Whether there is sufficient volume of suitable rock available at a suitable depth.</li> <li>The ability to accommodate potential changes in waste quantities.</li> </ul>
Sustainable Design	<p>The ability to design, construct and operate a GDF in a sustainable manner.</p> <ul style="list-style-type: none"> <li>The ability to deliver sustainable infrastructure that is sensitive to its location and demonstrates good aesthetics.</li> <li>The ability of a GDF to remain resilient to climate change, sea level rise and the potential for adaptation to more extreme, but credible, climate change scenarios.</li> </ul>
Waste Conditioning and Packaging	<p>The ability for waste that is already or still to be packaged to be accepted at a potential site.</p> <ul style="list-style-type: none"> <li>Whether there are any particular characteristics of an area or site which may prevent wastes that have already been packaged from being accepted.</li> <li>Whether there may need to be significant changes to current waste packaging advice.</li> </ul>
Retrievability	<p>The ability to design, construct and operate a GDF such that waste could potentially be retrieved during the operational phase if there is a compelling reason to do so.</p> <ul style="list-style-type: none"> <li>The host geological environment, depth and likely underground rock stresses.</li> <li>The types of engineered barriers that are likely to be used.</li> </ul>



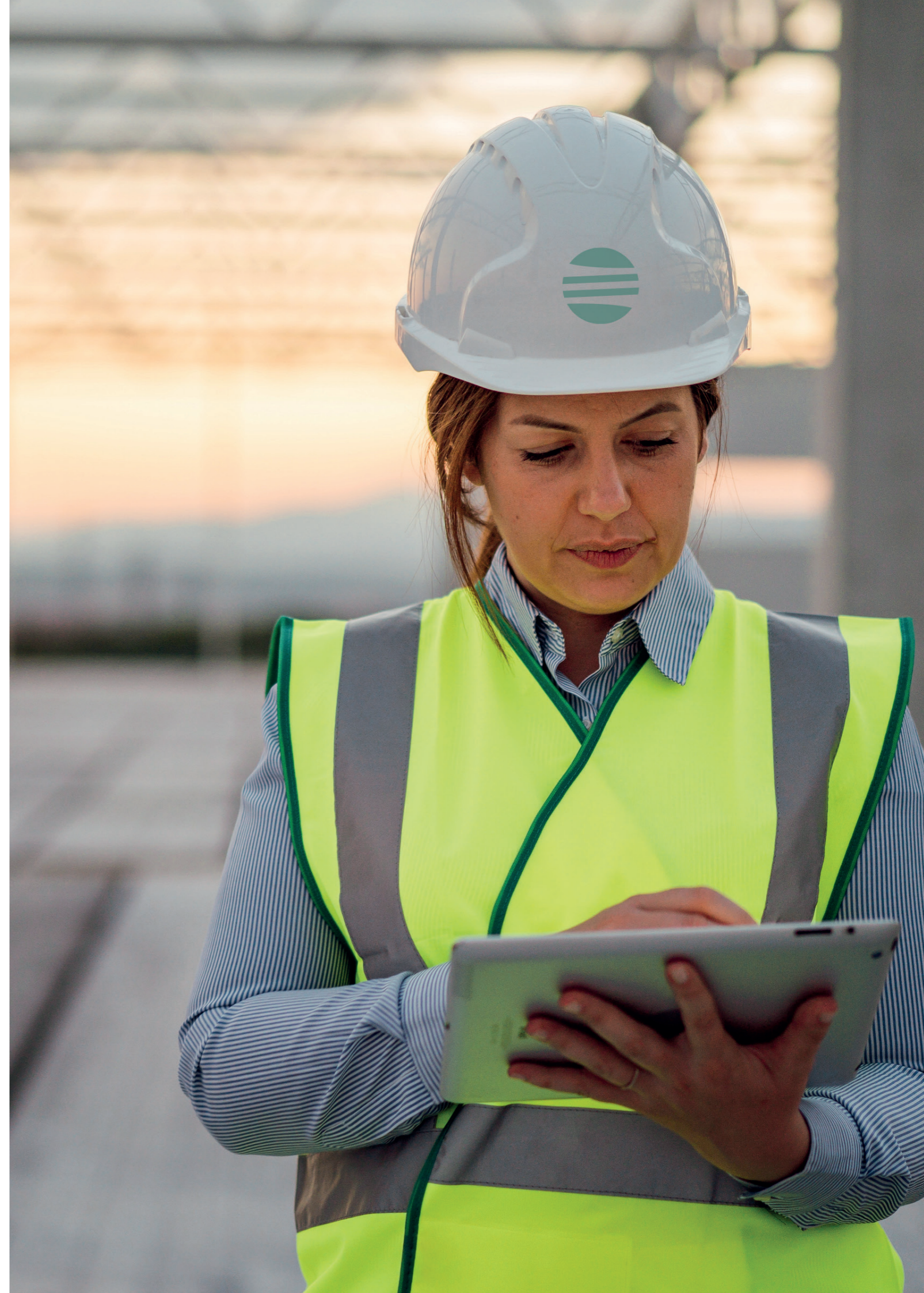
## Site Evaluation

Table E: Transport

Evaluation Consideration	Description
Transport Safety	The ability to transport waste safely. <ul style="list-style-type: none"> <li>The ability to demonstrate an acceptable level of control in respect of radiation, criticality and thermal hazards.</li> <li>The emergency provisions to protect persons, property and the environment in the event of accidents.</li> <li>The ability to use transport package designs that comply with the requirements and test procedures specified in the IAEA Transport Regulations.</li> </ul>
Transport Security	The ability to transport waste securely. <ul style="list-style-type: none"> <li>Whether there were any particular characteristics of an area or site which may prevent the ability to satisfy transport security Requirements.</li> </ul>
Transport Implications	The implications of the investigation, construction, operation and closure of a GDF on strategic and local transport networks. <ul style="list-style-type: none"> <li>The proximity of the area or site to the strategic transport network and the suitability of the strategic transport network.</li> <li>The proximity of the area or site to the local transport network and the suitability of the local transport network.</li> <li>The potential to use rail or water-borne transport systems.</li> <li>Additional transport infrastructure requirements and already planned improvements to the transport network.</li> <li>Heavy Goods Vehicle movements to and from the site during construction.</li> <li>The potential measures required to improve access by public transport, walking and cycling.</li> </ul>

Table F: Value for Money

Evaluation Consideration	Description
Lifetime Costs and Value	The costs and benefits of the investigation, construction, operation and closure of a GDF. <ul style="list-style-type: none"> <li>The costs of characterising, constructing, operating and closing a GDF.</li> <li>The benefits associated with all phases of the delivery of a GDF.</li> <li>Whether the delivery of a GDF provides value for money when considering the local, regional and national wider economic considerations.</li> </ul>
Waste Receipt Schedule	The implications of the investigation, construction and operation of a GDF relating to the assumed waste receipt schedule of the receipt of waste. <ul style="list-style-type: none"> <li>Whether there are any particular characteristics of an area or site which may provide greater (or lesser flexibility) to receive and accept wastes in line with a schedule of waste agreed with waste producers.</li> </ul>







Nuclear Waste  
Services

[www.nuclearwasteservices.uk](http://www.nuclearwasteservices.uk)

Nuclear Waste Services is a joint trading name of LLW Repository Limited (Company Registration No. 05608448) and Radioactive Waste Management Limited (Company Registration No. 08920190). Both of these companies are registered in England and Wales with their registered office located at Pelham House, Pelham Drive, Calderbridge, Cumbria CA20 1DB.

Part of the NDA group

