GDF

Identifying Areas of Focus

Our methodology

Nuclear Waste Services

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Identifying Areas of Focus

The Search Area

The GDF Siting Process begins with a conversation between an Interested Party and NWS. The Search Area is derived from the area first put forward for consideration by the Interested Party and is defined using district or unitary council electoral ward boundaries, depending on the administrative arrangements in place for the particular area.

The **Search Area** is the geographical area on land covering all the electoral wards within which NWS can search for potential sites.

The term "**inshore area**" is used to refer to the area beyond the coast out to a maximum of 22km off the coast. GDF facilities may be in the rocks under the seabed in the inshore area.

The next stage in the Siting Process is to form a Working Group to begin local discussions and fact-finding with the community. One of the tasks of the Working Group is to identify a Search Area(s), the geographical areas within which NWS undertakes studies and considers potential sites for a GDF if a Community Partnership is formed. For areas which include potential for development under the seabed, the policy definition of the Search Area refers to the area on land (not inshore).

As NWS's investigations progress, the Community Partnership may refine the Search Area as it identifies areas that it prefers to be ruled out of consideration, or brings in additional areas that were not initially part of the Search Area.

NWS takes time to understand the Search Areas, and where relevant, the adjacent inshore areas. Because Search Areas are quite large, NWS will in most cases need to narrow them down to focus studies on locations in them that could be suitable to host a GDF.

What are Areas of Focus?

Large, varied Search Areas and adjacent inshore areas make it challenging to undertake appropriately detailed and proportionate work to understand the feasibility of delivering a GDF.

NWS identifies smaller areas as the first step in the process of determining potentially suitable locations for the elements of a GDF within a Search Area and the adjacent inshore area.

Specifically, NWS focuses on three distinct Areas of Focus: Surface, Sub-surface, and Accessways. These smaller areas will guide the site evaluation studies and help prioritise resources for assessing the potential of each area to safely host a GDF.

The process NWS has followed in identifying Areas of Focus is similar to the approach taken by other large infrastructure projects. Based on current information, NWS has identified areas that may have the potential to host project infrastructure, taking into account environmental constraints, including proximity to settlements.

Some studies and investigations will continue across the Search Area and beyond – for example, to understand the wider geology and the potential benefits and impacts of a GDF.

Areas of Focus will almost always be larger than the proposed footprint NWS needs for a GDF. This will allow NWS the flexibility to gather information and data over a wide area, to further evaluate the potential of the area to safely host a GDF and to develop its design proposals through engagement and technical assessment.

Identifying Areas of Focus does not change the Search Area boundary. It is the role of the Community Partnership to review and refine the Search Area boundary.

Components of a GDF and Areas of Focus

A GDF will comprise three main elements – the right sub-surface geological environment deep underground for the disposal area; a surface location; and the ability to connect the two with accessway tunnels.

There will be other elements of development, such as new or improved transport links and utilities connections, to allow construction and/or operation of a GDF. There may be other works needed to help address the impacts of development, such as works to mitigate environmental impacts. At this stage, it is too early to identify areas for these developments, but NWS will be providing more information and talking to communities as it knows more in future.

NWS needs to identify potentially suitable locations for the key components of the GDF:

- the sub-surface (underground) facilities, which will be the series of vaults and tunnels in which radioactive waste would be permanently disposed of;
- the surface facilities, which will receive waste and will include shafts and/or tunnels through which the underground disposal location will be accessed;
- the accessway tunnels, connecting the surface and sub-surface facilities.

The Process for Identifying Areas of Focus

Step 1
Sub-surface Area of Focus

Areas with potentially suitable geology to safely host a GDF.

Identified using existing geological data.

Step 2
Surface Area of Focus

Areas within the Search Area that have the potential to host the surface facilities of a GDF.

Identified using criteria within the National Policy Statement for Geological Disposal and other factors.

Step 3
Accessway Area of Focus

Identification of potential routes between the identified surface and sub-surface areas.

Routing considers available geological information and seeks to avoid tunnelling beneath urban areas and settlements.

Further considerations that NWS takes into account in the identification of Areas of Focus:

- review against Siting Factors and relevant information from technical studies to date;
- suitability from a community and programme delivery perspective; and
- desktop review of land close to the boundaries of the Surface Area of Focus.

NWS Siting Factors

Safety & Security

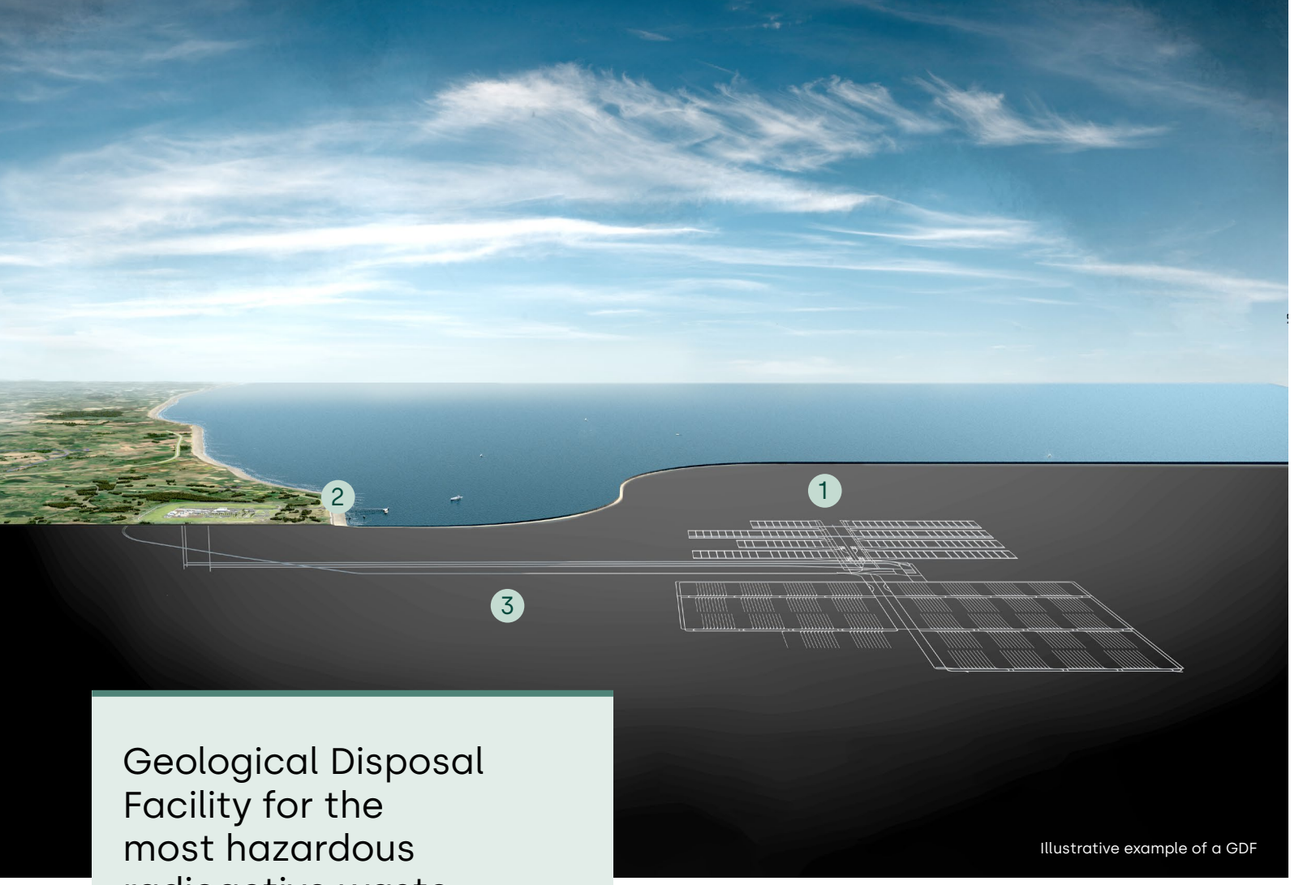
Community

Engineering feasibility

Transport

Environment

Value for money



Illustrative example of a GDF

Geological Disposal Facility for the most hazardous radioactive waste

1. Sub-surface
2. Surface
3. Accessways
   Tunnels connecting surface site to disposal area

Step 1

Identifying Sub-surface Areas of Focus

A GDF could be located in rocks under land or under the seabed in the inshore area which extends 22km from the coast. Within this, NWS undertakes studies to identify areas in the sub-surface that have the potential to host the underground facility of a GDF in which radioactive waste will be permanently disposed of.

Initially, NWS uses the outputs of the National Geological Screening Exercise, alongside other pre-existing geological data and information, to identify the areas that are more likely to have the characteristics to host a GDF. This is done by using the available geological data and information to identify and analyse areas which are more likely to:

- provide a potentially suitable volume of rock to accommodate the waste to be disposed of;
- have suitable geological characteristics to potentially develop a GDF; and
- could potentially be accessed from a suitable surface site.

The potential sub-surface areas identified are then reviewed against the relevant 'Further considerations in identifying Areas of Focus' (see p.10).

Step 2

Identifying the Surface Areas of Focus

Once a Sub-surface Area of Focus has been identified, NWS considers surface locations within the Search Area, that have the potential to host the surface facilities of a GDF.

NWS identifies land-use constraints based on the assessment principles, 'impact topics' and decision-making criteria set out in the National Policy Statement for Geological Disposal Infrastructure. These include:

- community considerations
  e.g. avoiding built-up (urban) areas and designated settlement boundaries which could be impacted by noise etc.; and
- protected areas and environmental constraints, for example National Parks, National Landscapes, ecologically sensitive/protected areas, areas with higher levels of flood risk, known Heritage Sites.

The constraints are digitally plotted on a map using a Geographical Information System (GIS) to capture existing data and to allow visualisation and identification of potentially less constrained areas that could be suitable to host above ground GDF facilities.

Once less constrained areas have been identified, boundaries or area limits are defined using physical, human or geographical landscape features e.g. roads, railways, rivers, woodlands, environmental designations and defined urban areas.

The potential surface areas identified are then reviewed against the relevant 'Further considerations in identifying Areas of Focus' (see p.10).

Step 3

Identifying the Accessways Areas of Focus

Once the Sub-surface and Surface Areas of Focus have been defined, NWS identifies a potential accessway area – a corridor within which the surface site could be connected to the sub-surface. The connections could be inclined tunnels linking to a surface portal, shafts with connecting tunnels below ground or a combination of both.

NWS uses the following considerations to identify a potential corridor route:

- community considerations
  e.g. to avoid tunnelling beneath urban areas and settlements; and
- geological characteristics
  e.g. consideration of available geological data.

The potential accessway areas identified are then reviewed against the relevant 'Further considerations in identifying Areas of Focus' (see p.10).

Further considerations in identifying Areas of Focus

NWS further considers potential Areas of Focus by taking a range of perspectives into account:

- NWS reviews potential Areas of Focus against its Siting Factors and considers relevant information from technical studies to date, including the proximity and viability of routes to transport networks e.g. the road and rail network; other nearby major development/ project plans and the stage to which they have progressed; and the relative accessway distances between various areas under consideration;
- NWS reviews the potential suitability of an Area of Focus from a community and programme delivery perspective; and
- NWS undertakes a desktop review of land close to the boundaries of the potential Surface Areas of Focus to consider their inclusion.

The review process ensures that the Areas of Focus can be defined in response to opportunities and constraints identified. It is possible that review and definition at this stage may result in some constraints being included within an Area of Focus. Such aspects will be further considered as part of continuing evaluation studies.

Areas of Focus going forward

As NWS's site evaluation work progresses and engagement activities continue to provide a better picture of the potential of the area to host a GDF, revisions to the Areas of Focus may be necessary. As such, the Areas of Focus that NWS has identified are not irreversible. They are also not a formal refinement of the Search Area, where wider feasibility studies will also continue. Areas of Focus will support further investigative and technical studies to inform NWS's decision on which areas to take forward to site characterisation.

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Part of the NDA group