

Briefing Paper 14

The Geological Disposal Facility siting process

Revised August 2022

1: Introduction

This Briefing Paper outlines the policy framework for the geological disposal of radioactive waste in England and Wales. It explains the context for current Government policy and outlines the main elements of the approach set out in the following documents:

- Working with Communities: long term management of higher activity radioactive waste, published in December 2018 (England¹) and January 2019 (Wales²). This explains how the Government will engage with local authorities and communities throughout the siting process.
- The National Policy Statement (NPS) for Geological Disposal Infrastructure³, which establishes a Geological Disposal Facility (GDF) as a Nationally Significant Infrastructure Project (NSIP). The NPS only applies to England – separate planning process will be applicable if communities in Wales enter the siting process.

This information on geology that has been published by Nuclear Waste Services (NWS) is summarised below. NWS's approach to Site Evaluation, i.e. the factors and considerations that the developer will use to assess sites, is also outlined.

The GDF siting process is now 'live'. Four Community Partnerships having been established in Cumbria and Lincolnshire and others may follow. Nuleaf has prepared other papers which members may find useful in understanding geological disposal:

- Policy Statement 3 – Geological Disposal, published in June 2019. This sets out Nuleaf's agreed policy in this area.
- Briefing Paper 5 – explains the issues around designing a GDF to enable the retrievability of waste.
- Briefing Paper 16 – which summarises the guidance on geological disposal provided by the UK Government advisory group, the Committee on Radioactive Waste Management (CoRWM).
- Briefing Paper 17 – which explains the inventory for geological disposal.

¹ <https://www.gov.uk/government/publications/implementing-geological-disposal-working-with-communities-long-term-management-of-higher-activity-radioactive-waste>

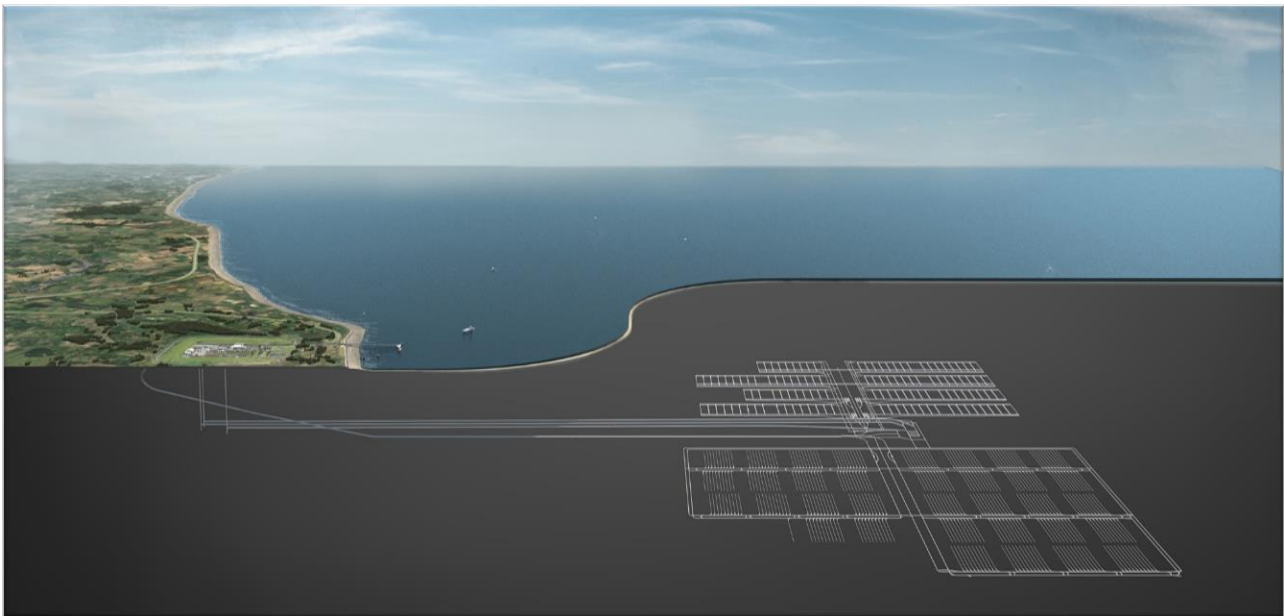
² <https://gov.wales/written-statement-geological-disposal-radioactive-waste-working-potential-host-communities-0>

³ https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/814491/national-policy-statement-geological-disposal-infrastructure.pdf

2: Higher Activity Waste and Geological Disposal

Current UK and Welsh Government policy is for the UK's Higher Activity Radioactive Waste (HAW) to be disposed of in a Geological Disposal Facility (GDF), a large scale, highly engineered development located deep underground. Geological disposal involves the use of multiple barriers contained within a suitable rock formation, itself a further barrier, with the aim of ensuring that no harmful quantities of radiation reach the surface or affect humans and the environment. The multiple barriers are:

- The form of the waste itself. For example, higher active waste that arises as a liquid is converted into glass before storage and disposal;
- Packaging of the waste;
- Engineered barriers that protect the waste packages and limit the movement of radionuclides if they are released from the packages;
- Engineered features of the facility itself; and
- A stable geological setting.



The Geological Disposal Facility will have surface facilities covering an area of around 1 square kilometre. These will be linked to the vaults and underground facilities through access tunnels or shafts, with the underground facilities up to 1,000 metres underground and potentially several kilometres from the surface access point (see illustration above). The underground facility could be located under land or up to 20 kilometres offshore, with a total underground footprint of 10 to 20 square kilometres.

While Government has developed current policy, the delivery of a Geological Disposal Facility is the responsibility of Nuclear Waste Services (NWS) Limited, a

wholly owned subsidiary of the Nuclear Decommissioning Authority (NDA). NWS is responsible for safety, security and environmental protection for the lifetime of the GDF development.

Government policy is for a volunteerist approach. In other words, it is up to individual communities to decide whether to enter and then remain in the process over a number of years before giving their consent to the development through a test of local support. Before being able to express their opinion on whether to proceed, an effective process of engagement will be required, with active efforts made to reach out to all parts of the community and help them understand the economic, social and environmental aspects of what is proposed.

In parallel to community engagement, the developer will undertake a range of technical investigations to characterise the site and assess its suitability. This is expected to take around 15 to 20 years, while the construction and operational phase will last for over 100 years.

3: The 2014 White Paper

Following the decision of Cumbria County Council in January 2013 not to proceed to Stage 4 of the previous Managing Radioactive Waste Safely (MRWS) process, the UK Government committed to develop a new approach to the management of Higher Activity Radioactive Wastes (HAW).

A 'call for evidence' on a new policy was launched in May 2013, with this being followed by a wider consultation in September 2013. Following representations from Nuleaf and a range of other organisations a White Paper – **Implementing Geological Disposal: A Framework** for the long-term management of higher activity radioactive waste – was published in July 2014.

This replaced the 2008 Managing Radioactive Waste Safely (MRWS) White Paper. It covers England, Wales and Northern Ireland, although the approach to the community and planning aspects in Wales has been taken forward separately by the Welsh Government. The Scottish Government has a separate policy on the management of Higher Activity Waste and Scotland is not participating in the GDF siting process.

The 2014 White Paper remained in line with the recommendations made to Government by the Committee on Radioactive Waste Management (CoRWM) in 2006. It restates the Government's commitment to manage 'higher activity radioactive wastes in the long term through geological disposal which will be implemented alongside ongoing interim storage and supporting research.'

The 2014 White Paper concedes that useful lessons had been learned from MRWS and therefore a different approach was proposed in some key areas. Overall,

there is an acceptance that clarity was required on some issues from the outset, and a need for a greater degree of flexibility with fewer formal stages and milestones.

The White Paper committed government to consult on the process for working with communities; to undertake national geological screening; and to establish a GDF as a Nationally Significant Infrastructure Project (NSIP). In order to take forward and finalise the approach a number of actions were set out for the Government and the developer, Nuclear Waste Services (NWS).

4: The current policy framework

The elements of the policy framework for geological disposal are the Working with Communities policy; a National Policy Statement for Geological Disposal; and the geological screening exercise. NWS has also published its approach to Site Evaluation.

Together these enable NWS to engage directly with any local authority or community that is considering entering the siting process. Each is explained below.

4.1 Working with Communities

Policy Development

To inform the approach to Working with Communities, a Community Representation Working Group (CRWG) was established by the UK Government in 2015. This drew together experts from academia, business, NGOs and local government, including Nuleaf's Executive Director. The primary objective of the CRWG was to develop practical advice on the following issues:

- Community representation: Defining 'communities' in relation to GDF development, and defining effective processes for community representation, including how to involve different tiers of local government; defining roles and responsibilities for those community representatives, including governance and decision-making processes; and how these will evolve over time.
- Test of public support: Providing clarity around the point at which a local test of public support would be considered appropriate, and the method(s) by which such a test could be carried out.
- Community investment: Developing options for disbursement of community investment funds, including when payments should be made, management of the investment, criteria for assessment of any funding applications and the ability of communities to influence investment within their geographic areas.

The group concluded its work in April 2016 and its recommendations were reported to the Secretary of State and used to develop the final policy. A formal consultation on proposals for Working with Communities was undertaken in early 2018.

Final Communities Policy

The **Working with Communities** policy for the GDF siting process in England and Northern Ireland was published on the 19th December 2018, with the Welsh policy launched on the 16th January 2019.

The final policies in England and Wales provide a range of background information on radioactive waste and the regulatory system, before describing the process that led from the 2014 White Paper to the agreement of the final policy in 2019. The policies also explain the other elements of work around planning and geology and the respective roles for Government and NWS.

a. Inventory for disposal

The Policy defines the inventory for disposal, that is the specific types of radioactive waste and nuclear material that would be disposed of in a GDF. These are:

- High level waste arising from the reprocessing of spent nuclear fuel at Sellafield;
- Intermediate level waste arising from existing nuclear licensed sites, defence, medical, industrial, research and educational facilities;
- the small proportion of low-level waste that is not suitable for disposal in the national Low-Level Waste Repository;
- spent fuel from existing commercial reactors (yet to be declared waste) and from research reactors that is not reprocessed;
- spent fuel (yet to be declared waste) and intermediate level waste from a new build programme up to a defined amount;
- plutonium stocks – plutonium not re-used in new fuel manufacture (yet to be declared as waste);
- uranium stocks – including that arising from enrichment and fuel fabrication activities (yet to be declared waste); and
- irradiated fuel and nuclear materials (yet to be declared waste) from the UK defence programme.

The Policy notes that inventory for disposal is unlikely to change significantly; also that the Government has a preference for all waste to be placed in one facility. However, development of more than one Geological Disposal Facility, with each facility accommodating part of the waste inventory, has not been ruled out.

b. Regulatory processes

The Policy states that safety and security are of paramount importance in the development of a GDF. It will not be built unless the highest standards can be demonstrated to the regulators.

It sets out the role of the various regulators and the stages of the process at which they will be involved:

- The Environment Agency/Natural Resource Wales will regulate the development of the site under the Environmental Permitting (England and Wales) Regulations 2010.
- The Office for Nuclear Regulation (ONR) will advise on operational safety, security and transport. ONR also has a key role in regulating the storage of Higher Activity Wastes on nuclear licensed sites until a Geological Disposal Facility is available. A Geological Disposal Facility will be classed as a nuclear installation under the Nuclear Installations Act 1965.

Regulation under the land use planning system will be in line with the designation of the GDF as a Nationally Significant Infrastructure Project (NSIP). There is also a role for Natural England in protecting the natural environment, and for the Marine Management Organisation if a coastal site is selected. Equivalent bodies will be responsible for these aspects of any GDF development proposal in Wales.

c. Local authorities and communities

Chapter 6 of the final policy for England and Northern Ireland sets out the approach to working with local government and communities. It explains the stages of the process, the timespan of which will be around 15-20 years (see below).

Following early dialogue between the developer and interested parties, the local process will be guided by a Working Group and then a formal Community Partnership. Community Investment Funding, initially of £1million per annum but rising to £2.5million, will be available for those communities remaining in the process.

At the end of the process, if successful, much more significant investment will be available for the community hosting the GDF itself. The Working with Communities policy states that the economic benefits would include around 600 skilled jobs over the 100 year plus duration of the project, with the workforce rising to over 1,000 during the construction phase. It is also likely that the GDF will involve 'major investments in local transport facilities and other infrastructure and create secondary benefits within industry, local education resources and local service industries' (6.66) though the extent of these wider benefits is not quantified and will, to a significant extent, be defined by local priorities.

The Policy explains the stages of the siting process, giving a clear and prominent role to local government at every stage:

- Initial discussions on a proposed location for a GDF can be instigated by anyone, or any group of people with an interest in the siting process, including local authorities. Such interested parties should contact the delivery body (NWS) for these initial discussions. If an approach to NWS is instigated by anyone other than a local authority, then all relevant principal local authorities (districts/boroughs/unitary authorities and counties) must be informed once it has been decided that the proposals merit further discussion.
- As a next step a Working Group would be formed, consisting of the interested party, NWS, an independent chair and facilitator. The Working Group will identify the geographical area within which potential sites for a GDF would be considered – this will be referred to as the Search Area. All relevant principal local authorities must be invited to join the Working Group, but if they choose not to participate, the Working Group can still proceed.
- The next stage would be to form a Community Partnership which will enable the community to share information and find answers to questions they have on the GDF. Membership of the Partnership will be informed by the Working Group and should contain community members, organisations, NWS and at least one 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. If it is to be successful, it will be important for a Community Partnership to reflect, both in its composition and views, the community it is representing. It should be respectful of a wide range of opinions.
- The Partnership will sign a Community Partnership Agreement setting out the principles of how members of the Partnership will work together, how they will make any decisions and what their respective roles and responsibilities are.
- From this stage annual Community Investment Funding of £1million will be available, rising to £2.5 million for communities that proceed to the deep borehole investigation phase. The Community Investment Funding can be used to fund projects, schemes or initiatives that provide economic development opportunities, enhance the natural and built environment, or improve community well-being.
- Communities and NWS have a Right of Withdrawal (RoW) from the process up to the final Test of Support. Any decision on whether a community should withdraw from the process will be taken by the relevant principal local authority /authorities on the Community Partnership. Where there is more than one principal local authority on the Partnership all must agree before a withdrawal proceeds.

- Before a decision is made to seek development consent, there must be a Test of Public Support by the community to demonstrate it is willing to host a GDF. 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 holding the Test of Public Support for it to go ahead. The form the Test of Public Support takes (referendum, poll etc) will be decided by the Community Partnership.

Welsh policy is similar in many ways, though it sets out a slightly different role for local government – if a local authority decides not to join the Community Partnership then its area is automatically excluded from the Search Area. It also gives a more prominent role to community councils and addresses the requirements of the different Welsh policy environment.

4.2 Land use planning

Policy Development

As the GDF is defined under the Planning Act 2008 as a Nationally Significant Infrastructure Project (NSIP), Government is required to prepare a National Policy Statement (NPS). The aim of this is to guide the developer (NWS) in preparing any application for development consent. It is also used as the primary basis for examination by the Examining Authority (Planning Inspectorate) and for decisions by the Secretary of State in considering Development Consent Applications (DCOs).

The NPS for geological disposal covers:

- Any deep geological facility for disposing of waste; and
- The deep borehole investigations necessary to characterise the geology at a particular site to enable assessment of the sites' suitability.

A draft **National Policy Statement for Geological Disposal Infrastructure**, along with an accompanying Appraisal of Sustainability (AoS) and a Habitats Regulation Assessment (HRA) was laid before Parliament and put out for consultation between January and April 2018.

The BEIS Committee of the UK Parliament also took written and oral evidence on the NPS, with Nuleaf called to provide evidence to the Committee on the 10th July 2018. The Committee published its report on the 31st July of that year. This made a number of recommendations in relation to National Parks and Areas of Outstanding Natural Beauty; new nuclear build; local community consent; and the need to better connect to the aspirations of the Industrial Strategy.

The National Policy Statement (NPS) for Geological Disposal

The National Policy Statement was published on the 4th July 2019. The Statement sets out:

- The Infrastructure covered by the NPS;
- Considerations for (a) borehole investigations and (b) the development of the GDF itself along with related sustainability and habitats considerations as assessed by the Strategic Environmental Assessment (SEA) and Habitats Regulations Assessments (HRA);
- The policy framework for the GDF and the need for geological disposal infrastructure;
- Assessment principles including those around Health, Safety, Security and Environment; and
- Impacts and Mitigation across a broad range of economic, social, health and environmental considerations.

Involvement of local authorities and communities

As an NSIP, the role of Local Planning Authorities within the planning process for a GDF is largely discretionary. However, there is a requirement to consult councils and other interested parties throughout the planning process:

- Before submitting an application for development consent, the Planning Act 2008 requires that the development must be publicised, and a 'Statement of Community Consultation' produced on which local authorities are consulted.
- Once the application for development consent is submitted to the Secretary of State (SoS), the Planning Inspectorate has a period of 28 days to decide if the application meets the standard required to be accepted for examination. During this period local authorities will be invited to make representations to the SoS regarding their view on whether consultation was adequate.
- If an application is accepted there will be a 3 month 'pre-examination' phase during which the public will be able to provide their views on the application. Everyone who makes a relevant representation will be invited to attend a meeting chaired by an Inspector.
- The Planning Inspectorate then has 6 months to carry out their examination of the application. Relevant local authorities will be able to submit Local Impact Reports and those who made representations in the 'pre-examination' phase will be able to provide more information on their views and participate in the Examination. This can be a very onerous phase of work.

For a local authority that is proposed to host or is affected by a GDF, the level of work required throughout the consultation, pre-application and examination

phases is likely to be very substantial and it will be imperative that resourcing is secured from the outset through a Planning Performance Agreement with the developer. Given the host local authority role post any consent in discharging requirements and potentially monitoring, this agreement is likely to need to extend through the implementation phase. The local authority is also the enforcement authority.

The development of a GDF has distinct characteristics related to the fact that, unique among NSIPs, geological disposal requires the consent of the host community before it can proceed. Section 2.1.6. of the National Policy Statement notes the significance of Implementing Geological Disposal - Working with Communities and that the policy 'applies to the Government's designated delivery body for its programme of geological disposal, RWM (now renamed NWS).' In other words, the clear commitments to a voluntary process, the right of withdrawal and the final test of support all apply to the development of a GDF process as managed by NWS. This linkage is again emphasised in Section 2.4 of the NPS.

The process set out above applies only to England. Planning decisions related to any Geological Disposal Facility development in Wales will be subject to separate processes under Welsh planning law.

4.3 Geology

The Geological Screening exercise

A desire for greater information on local geology emerged as a key issue during the Managing Radioactive Waste Safely process. The 2014 White Paper required NWS to undertake a national geological screening exercise. This was underpinned by guidance developed through close work with external experts such as the British Geological Survey and by international learning and engagement. Nuleaf was involved in advising NWS on the presentational aspects of the materials being developed.

The information available

The final results of the screening exercise were published in January 2018.

Through the geological screening exercise, information is now available for England, Wales and Northern Ireland. Information is provided for each of 13 geological regions as defined by the British Geological Survey (BGS).

Screening does not completely rule certain areas in or out and does not identify target sites for possible development. It is hoped though that it will enable more constructive discussions to take place at the local level regarding whether an area is likely to be suitable.

Later in the siting process more extensive geological studies, including boreholes, will be required. Borehole drilling is only anticipated in one or two areas, due to the high cost involved.

4.4 Site Evaluation

NWS's approach to Site Evaluation in England and Wales was published in February 2020. The approaches adopted in England and Wales are very similar although they reflect differences in the policy framework in each nation, for example in terms of the land use planning regime.

Requirements

The documents set out the types of issues that the developer, NWS, will need to consider during the GDF siting process in order to meet a range of relevant requirements, namely:

a. Legal and other requirements

Throughout the siting process, from investigating sites to closing a GDF once the waste has been emplaced, a wide range of legislative and regulatory requirements will have to be met. These include requirements derived from Environmental Permitting Regulations, nuclear industry safety regulations and the Energy Act along with many others. The GDF will also have to be aligned with relevant national strategies and plans e.g. on nature conservation and climate change.

In addition, a GDF will have to secure a range of consents from the UK's nuclear and environmental regulators and from planning authorities, relating to:

- Environmental Impact Assessment (EIA)
- Habitats Regulations Assessment (HRA)
- A Nuclear Site Licence, granted by the Office for Nuclear Regulation (ONR)
- Nuclear Industry Security Regulations 2003
- Environmental Permit(s)

b. Siting Process Requirements

Identifying a site for a GDF will take a number of years and will be guided by the Working with Communities policy (see 4.1) which sets out a process leading to a Test of Public Support to determine whether the community is willing for the GDF to proceed.

c. Land use planning requirement

These relate to the National Policy Statement (NPS) for Geological Disposal Infrastructure, as explained in Section 4.2. The NPS is not a site-specific document

but sets out a series of Assessment Principles and Impacts that should be considered when proposing a site for development.

Site Evaluation – Factors and Considerations

Drawing on the requirements, a series of six Siting Factors have been established⁴. These are the topic areas that will need to be addressed throughout the Siting Process in evaluating potential areas and sites:

Siting Factor	Description
Safety and Security	Whether the relevant Safety and Security Requirements, including those for safeguarding, can be satisfied.
Community	Whether the relevant Community Requirements, including the social and economic implications and community wellbeing can be satisfied.
Environment	Whether the relevant Requirements relating to environmental matters, including those for protected habitats and species can be satisfied.
Engineering Feasibility	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.
Transport	Whether the relevant requirements relating to the transport of waste, people and other materials can be satisfied.
Value for Money	Whether the relevant requirements relating to delivering value for money can be satisfied.

For each of these factors a number of evaluation considerations have been identified that will help NWS’s assessments and the discussions for communities. For example, under Community these considerations include those related to community wellbeing, socio-economics and health as well as how the development of a GDF is aligned with the objectives and vision of the potential host community.

The process of engaging with communities and identifying and considering possible areas and sites will take a number of years. Throughout this time the level of information will increase, with more detailed evaluations being undertaken and greater understanding coming from investigations. For example, a range of investigative techniques will be employed to increase understanding of the subsurface geology and environment.

⁴https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1069129/Site_Evaluation_ENGLAND.pdf

5: Nuleaf's view

5.1 Critical Success factors for the GDF siting process

Nuleaf was actively engaged in shaping the Working with Communities policy, the NPS and the development of geological information, and is supportive of many aspects of the final agreed position.

We believe that local authorities must be at the heart of any local siting process. This view is supported by the Working with Communities policy, but the developer (NWS) must translate this into local engagement that is effective and is supportive of the full involvement of any local authority that wishes to be part of the process.

Local authorities have a democratic mandate and also a wealth of skills in relation to planning, environmental management, economic development and engagement with local communities. The new process must also recognise the likelihood of local government reform and further decentralisation of power away from Westminster and towards city-regions and other groupings of local authorities. This may affect the way that the developer engages with community representatives in future.

The process must be responsive to local needs and progress at a pace that is acceptable to individual areas, rather than impose a 'one size fits all' approach. Community engagement here should draw on the good practice lessons learned in other countries such as Sweden. BEIS and NWS should recognise that meaningful stakeholder engagement must be adequately resourced.

The commitment to community investment is welcome. In order to encourage local areas to enter, there is a need to demonstrate more clearly the Government's commitment to deliver significant investment that will support transformative change within the host community.

A Geological Disposal Facility is unlikely to be available until at least the 2050s. Waste bound for a Geological Disposal Facility will have to be stored at other sites on an interim basis for many decades, creating issues for host local authorities. Nuleaf will continue to work with Government and the NDA to find the best solutions to interim waste management and storage. There must be appropriate engagement with communities who host waste to determine locally acceptable approaches to storage issues.

Finally, given the challenges of finding a consenting host community with appropriate geology, the current siting process may not deliver a GDF. We believe that Government should provide greater clarity on (a) how progress with the GDF siting process will be monitored and reviewed, and (b) what the likely next steps would be in the event of the process failing to identify a suitable site. It should be

recognised that further delays in the siting process will impact significantly on those communities that currently host the UK's radioactive waste.

5.2 Nuleaf's role in the GDF siting process

Nuleaf has a clear policy position on Geological Disposal which is set out in Policy Statement 3, as agreed by our members in June 2019. This commits us to a range of actions in support of our members and the wider local government family.

As the Local Government Association's representative body on the UK's nuclear legacy, we will continue to engage with the UK and Welsh Government, GDF developer (NWS) and the regulators to advocate our members' interests; and to build the capacity of our members to engage in the siting process if they wish. We will:

- Support impartially any local authority in England and Wales that, on whatever basis enters, or is impacted by, the GDF siting process.
- Continue to make the wider case to Government and RWM for the best economic, social and environmental outcomes to all communities involved.
- Support and advocate effective and inclusive local siting processes, where communities are able to discuss and learn about all aspects of the proposals, and also to question and challenge.
- Press Government and NWS to recognise the significant concerns that communities have regarding the long-term storage of HAW at Sellafield and other sites across the UK. These communities will host wastes for many decades to come and their role must be acknowledged within the siting process. Community benefits and investment should be provided on the basis of their service to the nation.
- Encourage Government and NWS to engage with and listen to communities on the issue of retrievability of waste.
- Advocate to Government and NWS the need for the transportation impacts of the GDF siting process to be fully recognised and addressed.
- Engage with and represent local government and community interests in any parallel process for the management of HAW through Near Surface Disposal (NSD). Nuleaf believes that any siting process for NSD facilities must be based on voluntarism and community consent.

Our engagement will reflect the diversity of views within our membership and our central role as a supporter of local government. Our meetings will be a forum for open debate and discussion on all aspects of geological disposal. All perspectives will be presented, including the views of those who advocate alternative solutions to the long-term management of Higher Activity Wastes (HAW).

We believe that any GDF development should be for UK wastes only and that further clarification of the final inventory is required. Government should undertake regular reviews of policy to consider alternatives, informed by both

physical and social science research, and practical learning from the UK and across the globe. A strong commitment should be made to undertake R&D to reduce uncertainties about long-term safety.

Finally, steady progress with the GDF siting process must be demonstrated, underpinned by a strong commitment from Government and NWS to deliver the facility in a timely manner. Regular reporting on progress is required to reassure local authorities and communities that the development of a GDF is a national priority. Government must also give a clear explanation of what it intends to do if the current siting process is unable to deliver a GDF.